SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[*The* MINING JOURNAL *is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.*]

No. 2310.—VOL. XLIX. LONDON, SATURDAY, NOVEMBER 29, 1879. PRICE (WITH THE JOURNAL) SIXPENCE. PER ANNUM, BY POST, £1 4s.

WEIGHING MACHINERY

for all Commercial purposes and graduated to any NATIONAL STANDARD by Patent Machines

HODGSON AND STEAD LIMITED ESTABLISHED 1852.

Egerton Iron Works, Regent Road, MANCHESTER \ Show Rooms, 15 New Bailey St, SALFORD \ Bradford Road, DEWSBURY \ Uttoxeter New Rd, DERBY \ NEWPORT MON. and CARDIFF \ 11 Queen Victoria St, LONDON EC

Our "Patent Steelyard" is extensively used by Foreign Railway Companies and Merchants. It indicates the weight in any NATIONAL STANDARD, and shows the EQUIVALENT in two or more different denominations. There are NO LOOSE WEIGHTS.

The Barrow Rock Drill

COMPANY

SUPPLY their CELEBRATED ROCK DRILLS, AIR COMPRESSORS, &c., and all NECESSARY APPLIANCES for working the said Drills.

Their DRILLS have most satisfactorily stood the TEST of LONG and CONTINUOUS WORK in the HARDEST KNOWN ROCK in numerous mines in Great Britain and other countries, clearly proving their DURABILITY and POWER.

The DRILLS are exceedingly STRONG, LIGHT, SIMPLE, and adapted for ends, stopes, quarries, and the sinking of shafts. They can be worked by any miner.

For PRICES, Particulars and Reports of Successful and Economical Working, apply to—

LOAM AND SON,
LISKEARD, CORNWALL.

"Cranston" Rock Drill

IS DRIVING LEVELS 200 LINEAR FEET PER MONTH IN HARD QUARTZ ROCK. "EBERHARDT" TUNNEL AND DRIFT IS NOW DRIVEN IN OVER 5670 LINEAR FEET WITH THESE DRILLS AND COMPRESSORS.

CAN BE SEEN IN DAILY PRACTICAL OPERATION DRILLING 80 FEET OF BLAST HOLES PER DAY IN LIMESTONE ROCK AT ONE-FIFTH THE COST OF HAND LABOUR.

For other particulars and prices, apply to—

J. G. CRANSTON,
22, Grey-street, Newcastle-on-Tyne.

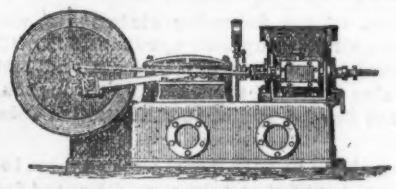
THE PATENT

"ECLIPSE" ROCK-DRILL

AND

"RELIANCE" AIR-COMPRESSOR

PRIZE MEDAL, HIGHEST AWARD.



PARIS EXHIBITION, 1878.

ARE NOW SUPPLIED TO THE

ENGLISH, FOREIGN, AND COLONIAL GOVERNMENTS,
And are also in use in a number of the
LARGEST MINES, RAILWAYS, QUARRIES, AND HARBOUR WORKS IN GREAT BRITAIN AND ABROAD.

FOR ILLUSTRATED CATALOGUE AND PRICES, apply to—

HATHORN & CO., 22, Charing Cross, London, S.W.

JOHN FOWLER & CO.,

Steam Plough Works, Leeds; and 71, Cornhill, London, E.C.

PARIS AWARDS.

GRAND PRIX
AND
THREE PRIZE MEDALS.

MANUFACTURERS OF THE

PATENT YORKSHIRE COMPOUND SEMI-PORTABLES (the most economical Stationary Engine in the trade).
HAULING AND WINDING ENGINES, all sizes.
LOCOMOTIVES of various gauges.

AIR COMPRESSORS, VENTILATORS, &c.
CLIP PULLEYS; STEEL WIRE ROPES.
MULTITUBULAR and MARINE BOILERS.

Catalogues, Specifications, or References to Parties using our Machinery can be had on application.

IMPROVED PATENT

"INGERSOLL ROCK DRILL."

MEDALS AND HIGHEST AWARDS

SEVEN YEARS IN SUCCESSION

FOUR IN ONE YEAR.

American Institute, 1872.
American Institute, 1873.
London International Exhibition, 1874.
Manchester Scientific Society, 1875.
Leeds Exhibition, 1875.
Royal Cornwall Polytechnic, 1875.
Rio de Janeiro Exhibition, 1875.
Australia Brisbane Exhibition, 1876.
Philadelphia Exhibition, 1876.
Royal Cornwall Polytechnic, 1877.
Mining Institute of Cornwall, 1877.
Paris Exhibition, 1878.

AWARDED FOR

SIMPLICITY in CONSTRUCTION.
AUTOMATIC FEED
(Perfect success)
GREAT STEADINESS.
GREAT POWER.
GREAT DURABILITY.
GREAT EFFECTIVENESS.

LE GROS, MAYNE, LEAVER, & CO.,

60, Queen Victoria Street, London, E.C.

SOLE AGENTS FOR THE

DUSSELDORF WROUGHT IRON TUBE WORKS.

Estimates given for Air Compressors and all kinds of Mining Machinery. Send for Illustrated Catalogues, Price Lists, Testimonials, &c., as above.

JOSEPH FIRTH AND SONS'

New Patent Brick-making Machine

Embraces the following advantages—viz.:

Simplicity, strength, and durability. Compactness and excellence of mechanical arrangements, large producing capabilities, moderate cost.

It will make 12,000 to 14,000 plastic pressed bricks per day, hard enough to go direct to the kiln without drying.

WEBSTER HILL, DEWSBURY.

[*See Illustrated Advertisement every alternate week.*]

"Kainotomon" Rock Drill

SELECTED BY THE

BRITISH, PRUSSIAN, & SAXON GOVERNMENTS.

SUPERIOR AIR COMPRESSORS.

T. A. WARRINGTON,

30, King-street, Cheapside, London.

For Excellence and Practical Success of Engines.

Represented by Model exhibited by this Firm.

HARVEY AND CO.,

ENGINEERS AND GENERAL MERCHANTS,

HAYLE, CORNWALL,

LONDON OFFICE.—186, GRESHAM HOUSE, E.C.

MANUFACTURERS OF

PUMPING and other LAND ENGINES and MARINE STEAM ENGINES of the largest and most approved kinds in use, SUGAR MACHINERY, MILLWORK, MINING MACHINERY, and MACHINERY IN GENERAL. SHIPBUILDERS IN WOOD AND IRON.

MANUFACTURERS OF

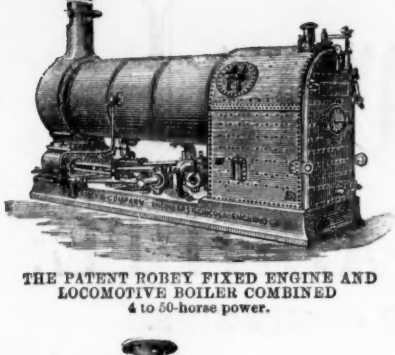
HUSBAND'S PATENT PNEUMATIC STAMPS.

SECOND-HAND MINING MACHINERY FOR SALE,

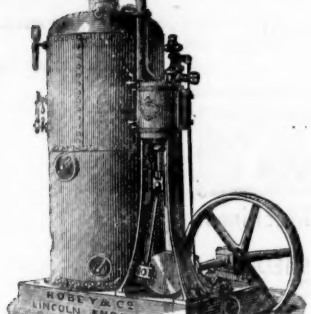
IN GOOD CONDITION, AT MODERATE PRICES—viz.,

PUMPING ENGINES; WINDING ENGINES; STAMPING ENGINES; STEAM CAPSTANS; ORE CRUSHERS; BOILERS and PITWORK of various sizes and descriptions; and all kinds of MATERIALS required for MINING PURPOSES.

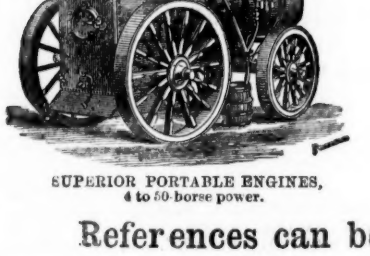
ROBEY & CO., ENGINEERS, LINCOLN.



THE PATENT ROBEY FIXED ENGINE AND LOCOMOTIVE BOILER COMBINED
4 to 50-horse power.



VERTICAL STATIONARY STEAM ENGINE AND PATENT BOILER COMBINED,
1½ to 16 horse power.

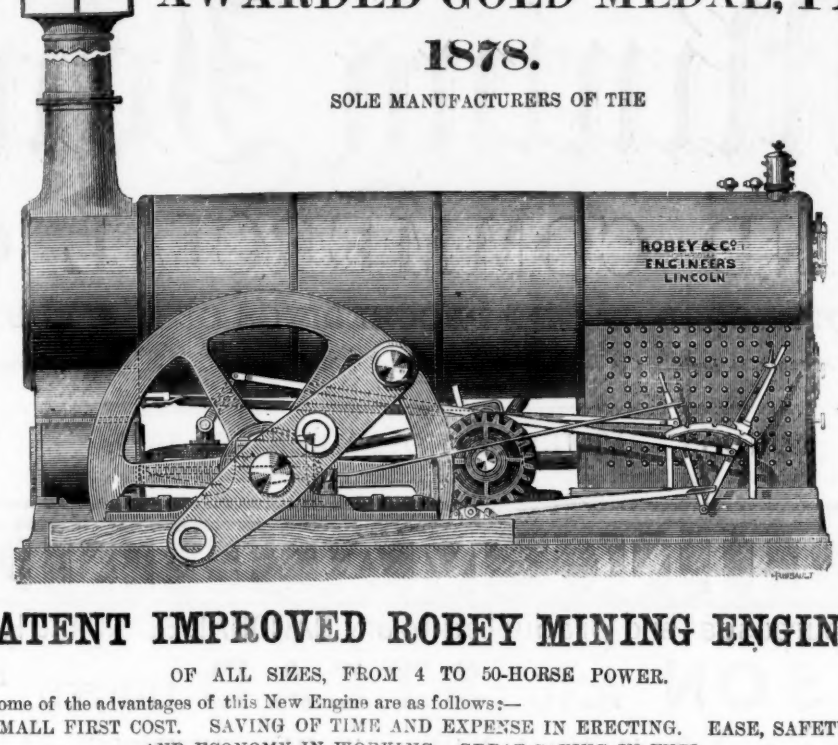


SUPERIOR PORTABLE ENGINES,
4 to 50-horse power.

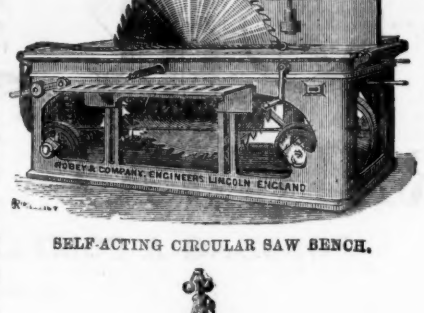
AWARDED GOLD MEDAL, PARIS EXHIBITION, 1878.

SOLE MANUFACTURERS OF THE

No Expensive Brick Buildings or High Chimney required.



Boiler can be supplied with special Fire-box for Burning Wood, Sawdust, Turf, and every description of inferior Fuel.



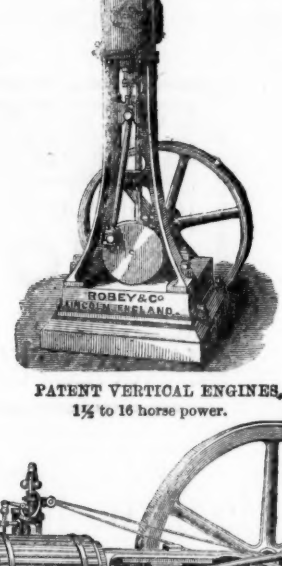
SELF-ACTING CIRCULAR SAW BENCH.

PATENT IMPROVED ROBEY MINING ENGINE

OF ALL SIZES, FROM 4 TO 50-HORSE POWER.

Some of the advantages of this New Engine are as follows:—
SMALL FIRST COST. SAVING OF TIME AND EXPENSE IN ERECTING. EASE, SAFETY, AND ECONOMY IN WORKING. GREAT SAVING IN FUEL.

This New Engine is free from all the objections that can be urged against using the Semi-Portable Engine for permanent work, because it possesses the rigidity and durability of the Horizontal Engine, and at the same time retains the advantages of the Semi-Portable in saving time and expense in fixing.



PATENT VERTICAL ENGINES,
1½ to 16 horse power.

THE PATENT ROBEY FIXED ENGINE

(Also above illustrated) is admirably adapted for driving Rolling Mills, Saw Mills, Brick Machinery, Pumping Machinery, and all descriptions of Fixed Machinery.

ENGINES UP TO 200 EFFECTIVE HORSE-POWER ALWAYS IN PROGRESS.

Prices and full particulars of all the Machinery here illustrated on application to the Sole Manufacturers,

ROBEY & CO.,
ENGINEERS, LINCOLN, ENGLAND.
London Office: 117, Cannon Street, London, E.C.

IMPROVED HORIZONTAL FIXED STEAM ENGINE.
4 to 60-horse power.

References can be given to upwards of 5600 ENGINES of all sizes, from 2 to 50-horse power.

MECHANICAL VENTILATION OF MINES.

THE UNION ENGINEERING COMPANY (C. SCHIELE AND CO.) undertake the Construction and Erection of their Colliery Ventilation Fans, of all sizes up to the largest required quantities of air. The leading features of their system are now generally known. Some of the specialities are: The absence of necessity for costly erections in masonry and brickwork: the small space required for the Machines, and the moderate first cost of the whole.

As the Fans are in a great measure self-contained, the necessary seats and connection with Pit are of a simple and inexpensive character. They can be arranged to be placed below ground when required, and also to work on Drawing Shafts. Certain sizes are often used to assist in Furnaces, with good effect.

[Estimates and further information will be prepared on receipt of the necessary particulars].

FOR SINKING PURPOSES, and also for places where small quantities of air are needed for Ventilating purposes, a Special Fan is made, in various sizes, with small engine combined, complete, arranged for both forcing and exhausting air.

NOISELESS BLOWING FANS, for Smithy Fires, and other purposes.

TURBINE WATER-WHEELS, specially designed and adapted for use in Coal Mines, for high falls of water, for the purpose of developing water power, where it is available, for use in hauling, pumping, and other works.

The Firm, having had an experience of nearly twenty-five years exclusively in the above Special Departments of Engineering, are prepared to advise on any matter affecting the application of Fans or Water Power in Collieries or elsewhere.

COAL-CUTTING MACHINERY, WINDING, HAULING, AND OTHER DESCRIPTIONS OF STEAM-ENGINES.

THE UNION ENGINEERING COMPANY (C. SCHIELE & CO.),

PNEUMATIC AND HYDRAULIC ENGINEERS

(SOLE PROPRIETORS AND MAKERS OF SCHIELE'S LATEST PATENTS),

2 CLARENCE BUILDINGS, BOOTH STREET, MANCHESTER.

BELTING versus GEARING.

Of late years a great change has been gradually taking place in the Mills and Manufactories of Lancashire and Yorkshire by the substitution, betwixt the Engines and Shafting, of Belting for Gearing, thus doing away with all noise and vibration, as well as wonderfully reducing the cost of repairs; and so manifest are its advantages that driving by Gearing will soon be the exception.

As a still greater improvement, we beg to submit our Wrought-iron Drums (Rodgers's Patent), of which we are the Sole Makers. Their special merits may be briefly stated as follows:—

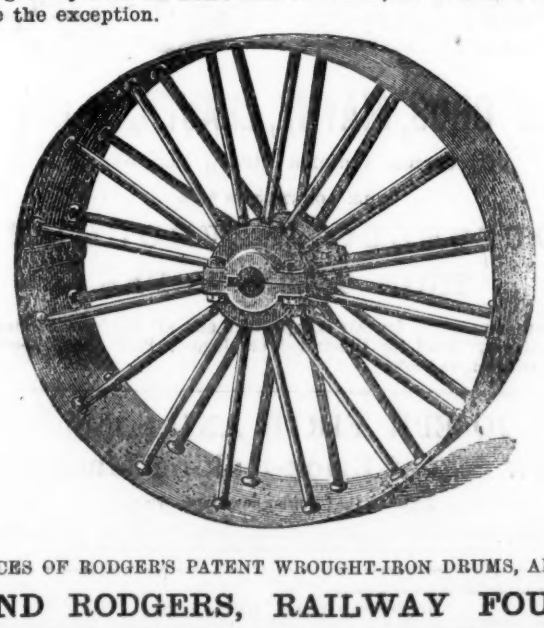
1.—These drums absorb less of the power of the engine in friction than any other mode of driving.

2.—Leather belts on these drums will drive considerably more than cast-iron ones, and the belts last much longer.

3.—These drums are not only considerably lighter in the larger sizes, but also infinitely stronger than cast-iron ones.

4.—In case of fire they suffer little damage. We have repaired many hundreds that have been in very serious fires, generally at about 25 per cent. on first cost.

5.—For MAIN DRIVING purposes they are invaluable, especially in case of a new mill, as they do no require such substantial and heavy building construction as is necessary in ordinary cases to withstand the constant vibrations of gearing.



6.—The wrought-iron drums and belts are more easily and quickly fixed than gearing.

7.—Greater economy in steam power, as it requires less power to transmit the same effective force with belt than it does with gearing.

8.—Very much greater economy in subsequent repairs as compared with gearing.

9.—The power is transmitted evenly, faithfully, and noiselessly, and without the vibration arising from defective or worn gearing.

10.—They require no cases for transport or shipment.

In support of the foregoing statements, we may say we have already supplied upwards of 20,000 of these Drums for use in Great Britain and Ireland, and have also exported them largely throughout the Continent of Europe, India, and the British Colonies.

These drums being made by special machinery, can be made any diameter up to 24 feet, and also any width up to 4 feet, and to fit any size of shaft.

FOR PRICES OF RODGER'S PATENT WROUGHT-IRON DRUMS, APPLY TO

HUDSWELL, CLARKE, AND RODGERS, RAILWAY FOUNDRY, LEEDS, ENGLAND.

SOLE AGENTS FOR LANCASHIRE CHESHIRE, AND NORTH WALES:—WELCH AND SCOTT, MARKET STREET, MANCHESTER

Original Correspondence.

MINING SPECULATION.

THE PRESENT WANT OF CONFIDENCE—CAUSES.

SIR,—From 1868 to 1875-6 the great object of the speculative public was to become interested in some mineral undertaking; and no matter in what part of the world a mining prospectus issued, the shares were speedily and eagerly applied for, and in many instances, before a single "find" had been made in the sett, the shares were at a premium. During the aforementioned dates unlimited confidence was given to anyone who had been even for the shortest period employed in mineral working—the miner was the honoured guest of the millionaire, fêted, pampered, and implicitly trusted; and this very confidence, created by the would-be speculator (mining), became one of the causes of his own downfall and ruin. Any bit of rocky matter picked up and brought to the capitalist was treasured as if the substance had been in itself a diamond of the first water. The finders gave an account of the land containing inexhaustible mineral riches, with an immediate prospect to everyone who became interested in the enterprise—wealth speedily rivalling that of Crœsus himself.

Observing the avidity with which such speculations are entered into by the public generally brought forth the latent of the clever but utterly unscrupulous adventurer who obtained information from the original finder or discoverer (the working miner), and through this intermediate party (between the really wealthy capitalist and the lessor) prospectus after prospectus was concocted, flowing with the benefits derivable from investment in an undertaking in which there was no proved deposit of ore, nor indeed any favourable features. This, however, occasioned no anxiety to the promoters, the "floating" alone of many such companies being the means of enriching them before any work had been begun; and though the parties who made public the speculation had little or nothing risked in the venture. they were benefited, whether the mine had merit, or whether it was thought from beginning to end a swindle pure and simple. But such was the blind credulity placed in anyone connected with mineral productions that time after time saw the game repeated, and ruin and desolation brought home to the shareholders and the blameless; they cannot be held, yet the seductive influences of several mines having been the means of in a short period generating wealth that could not be procured by steady business pursuits, combined with the plausibility of those whose sole object it was to obtain capital for themselves by any means, honourable or otherwise, for a time silenced enquiries, and permitted floatations of properties that were thoroughly worthless, and had no favourable features excepting upon paper.

So successful in their endeavours were the promoters of mining companies that nearly every continent under the sun became an object of their attention and solicitude, no matter how distant nor how difficult of access—indeed, these features in themselves favoured rather than otherwise the evil intentions of the schemers, they well knowing that an extended and time-consuming journey is by no means relished by the merchant or other commercial man, he in a great measure trusting to agents and reports rather than neglect his usual daily occupations. After a period had elapsed greatly beyond the specified term of his being assurred of a handsome return, a feeling of anxiety began to be manifested—prompting enquiries. The replies, however, were constructed with the same plausibility and astuteness that characterised the undertaking from the commencement, and for a time the unrest of the shareholders was dismissed.

Noticeable is the finesse in the majority of mining undertakings—the introducer has a friend, who, with the introducer as secretary, and his friend as agent or manager, the mine cannot fail to produce cent. per cent. In 99 cases out of 100 these men are hand in hand, and so lay their plans that even should the mine result in heavy loss to the shareholders the promoter and his colleagues reap a rich reward. Independent of the salaries obtained by the secretary, manager, and their minions, are the many opportunities of dishonestly obtaining commissions—the order for the various machinery, plant, &c., not in numerous instances, is given to the lowest quotation, but to the firm who holds out the heaviest douceur. The result is inferior machinery, &c., is supplied, causing accidents and stoppages innumerable, consequently loss to the shareholders. In nearly every country such results are to be found, and it is not, therefore, surprising that, being allowed to pursue the career we have noticed, these parasites have shaken public confidence and been the means of paralysing mining and other industries, hindering the development of many a really valuable property; and so great is the present suspicion that unless the vicious course of such men is curbed, and thorough eradication of their practices brought about, the mistrustful feeling existing will gather strength, and the reputation of our country become seriously assailed.

Within the last few weeks an improvement is noticeable in the crude and manufactured iron, and other mineral markets; and should the hoped-for reaction become general it will be found the promoting men will again be directing their energies to their favourite methods of obtaining capital. To prevent the repetition of their unworthy and harmful practices should be the object of all who are or have been the victims; and for the accomplishment of this end we would suggest that an association be formed on some such principle as the following:—That those who are speculatively concerned (in mineral development) should form an association with the object of obtaining information distinct and altogether apart from the reports given by the promoters of any public limited company. That a number of known and able engineers and inspectors be appointed, and make inspections of the companies floated, giving their unbiassed and truthful opinion of the undertaking, and that throughout the development of the concern to occasionally inspect and periodically report upon the prospects.

By some similar arrangement to the course we have proposed there is little doubt that a healthy and confidence-giving power would be established to the benefit of every class of society, and that a number of mines now being worked with waste and unprofitableness would become paying and dividend yielding. Though Cumberland is comparatively a small county, it is the depository of a mineral commanding prices above any known iron ore that has been the means of making "passing rich" many who but for having been engaged in such mineral searching would have remained unknown. It is not, however, simply from the superiority of the Cumberland and North Lancashire ores alone nor the vastness of the deposits that such wealth has accrued to the mine owners and lessors. To what, then, may be asked is the success due? We answer—The nearly unparalleled prosperity of West Cumberland and North Lancashire mining speculation is in a great measure the result of a thorough study of the laws or conditions geologically connected with the deposits, close and constant attention to every minutia regulating the working of the mines, men of known ability and judgment intimately acquainted with the various approved methods of engineering and extraction, and last, but not least—probably greatest—honesty and faithfulness to the employer—the absence of in the paying mines the promoter and his colleagues, the presence of thoroughly practical workmen, miners of intelligence and foresight, men whom confidence can be placed in by their superiors and managers, who's object is not to do the least work in the most time, but who when employed in their pursuits notice every new feature presented and deduct therefrom, profiting by the experience, and avoiding for the future that which had proved disastrous and unprofitable, not a mere surface grubbing upon the mines estate here, there, and everywhere, without paying any attention to the several signs presented by the formation, but thorough proving of the ground in those localities that to the eye of the miner point out the probabilities of a successful return for capital expended, not the erection of useless and expensive machinery and palatial offices, but economy in every department. In the sinking of shafts special care as to the choice of engine, gear, &c., and though in the bore-holes ore has been found a small trial shaft is frequently put down before the permanent pit is sunk, thus obtaining more complete information than would be simply by the result of boring. We have frequently noticed the very beneficial results of this form of proceeding, and how many disappointing and vexatious losses have been avoided. In West Cumberland and North Lancashire the favourite engine for this purpose seems to be the Robey fixed mining engine; and when considering the adaptability with which this engine can be moved, and the expeditious and economic manner in which it does its work, the demand for this class of engine is not to be wondered at.

Sundry attempts have been made by City men to float limited mining companies in West Cumberland for the working of iron and other ores, but in no instances have the endeavours been a success, excepting to the promoters who lined their pockets by the simple act of flotation, and then found it politic to retire from the undertaking or throw the company into liquidation. Several London gentlemen distinguished for their abilities that do not command admiration or respect have for the last few years been represented in this part of the country by various abortive captains who, when they gather any information, post up their employers, and should such superiors not be "wanted" for their last mining escamotage in the district, a flying visit is probably made, and with the necessary information and aid of colleagues (probably someone who by unaccountable means has a membership in a club and entrée to society of a class superior to several of his co-schemers) another attempt at flotation is made, and benefit, so far as a certain number of the promoters and shareholders, the result of the well-organised and diplomatic arrangement. But in no single instance do we know of a mining property under the influences of such a band ever having been properly conducted- In the generality of cases the usual method is to abandon the mine upon some pretext or other after a slight working; and, strange as it may seem, this course has been of greater profit to certain sections of the company than if a thorough trial of the property had been made, though the majority of the shareholders are by no means satisfied; and it cannot, therefore, be unexpected that after requiring information from both manager and secretary, and failing to obtain the same, enquiries are set about from other quarters.

Church-street, Whitehaven, Nov. 18. WM. WILSON BARNES.

SHEFFIELD LOCAL COMPANIES—REVIVAL OF TRADE.

SIR,—In looking over your market quotations of various share capital I observe an inaccuracy with regard to one of our local companies, which four or five years ago occupied a first-class position in public estimation. I refer to Wm. Cooke and Co. (Limited). The amount paid up is 45*l.* per share, and you quote them 44 to 45 dis. Like many other firms, the continued bad times have affected them severely, and owing to the absence of dividend, it is true, the shares stood for a short time at the above figure. They are now quoted 35 per cent. dis., at which price several lots have changed hands recently.

I have frequently thought over the disproportionate depreciation of capital in the absence of dividend for a time as compared with real valuation and prospects, and this is a striking example of it. The public usually base all upon the payment or non-payment of a dividend, without looking further into the matter. The last balance-sheet of W. Cooke and Co. showed assets nearly three times over liabilities, and these assets were cut down to last year's low rates, and yet because no dividend has been paid for some time the property stands this day to purchace at 4s. 6d. per 1*l*.. and this in the face of vendors' and other shares forfeited to the amount of nearly 40,000*l*., which of course benefits by so much the present shareholders.

The demand for steel wire in this district is probably unprecedented, and as this is the chief production of the company (whose works, by-the-bye, I ought to say occupy an area of nearly 20 acres), a very large and remunerative business is being done: 5000*l*. will pay a dividend of 5 per cent. to the original shareholders with 45*l*. fully paid up, and when this small sum has been earned and paid it may be asked how near 20 per cent. or even 10 per cent. will the shares stand at?

REVIVAL.

BLYTH, THE LEGITIMATE PORT FOR THE NORTHUMBERLAND STEAM COAL EXPORT.

SIR,—In last week's Journal you have an able article on the shipment of coal at Blyth. Permit me to refer to my correspondence in the Journal under date Oct. 25. With the adoption of my system, therein fully developed, I can prove to the coalowners, Sir M. W. Ridley, Bart., and all it may concern, that coal can be conveyed at 6d. per ton from the pit's mouth to Blyth Harbour. I know Blyth well, having been often there, and had one or more interviews with Mr. Laws, Sir Matthew's able commissioner. If those most deeply interested would exclude all auxiliary interference and undercurrent influence, the matter is capable of being arranged very materially to their advantage. WM. JOSEPH THOMPSON.

Little Tower-street, Nov. 26.

IMMENSE INCREASE OF REVENUE TO RUSSIA—HYPER-REHABILITATION OF IMPERIAL FINANCES.

SIR,—With reference to my correspondence in last week's Journal, strange to relate the idea of the appropriateness of an elevated wooden railway to Siberia—a country endowed with interminable forests—pervaded the minds of the labourers employed to cut the telegraph poles in that region, so that in lieu of 5 in. diameter at the top they adjusted them to 12 in., thinking the intention was to construct a railway on the summit. These men were so occupied in a temperature ranging from 40° to 60° below zero, no slight trial for the endurance of the denizens of Yakutsk, where the earth is frozen to a depth of 380 ft., thawing in summer 3½ ft. of the surface. Any amount of labour can be engaged at reduced rates, and horses purchased and kept at a very low cost, which I mention, without entering into prolix details, to show that every facility exists in this important respect of engaging men inured to an Arctic climate. It is proverbial that a mujik, metaphorically speaking, is born with an axe in his hand, with which he can do wonders—carpenter's work, the speciality requisite for this undertaking, being that in which he excels.

An eminent English author, thoroughly conversant with Siberia, states in a recent work, "Siberia's facility for internal communication will divert all Eastern traffic from existing channels, placing Moscow in the centre for carrying on the trade of the Eastern World." Siberia is almost an uninterrupted plain, with only here and there some few inequalities in the surface, but scarcely any elevations high enough to be called hills. Von Humboldt found in Siberia the greatest degree of dryness hitherto observed on the surface of the globe, extremely favourable for fabrics or constructions of wood. The Montreal Gazette of Feb. 2, 1868, and later issue, give a description of Clifton wooden railroad, 20 miles long—rails of wood fastened to the ties, into which they are let by a couple of wooden wedges, so that not a particle of metal or iron is used in the whole construction. Baron von Wrangel, in his able work, states that the prevailing wind in summer is from south-east, and the most frequent annual average, especially in winter, north-west. The Bankers' Magazine, New York, February, 1876, quoting from the Times City Article of the 4th of the previous month, states, "Chief among the causes of a threatened collapse in agriculture and commerce in Russia is the keen competition of America, caused by her superior transit advantages. With Russia cheaper inland transportation is the chief need." As an instance of the exuberant fertility of the soil of Siberia the ordinary yield is 6 to 10 fold, south of Tomsk, with the "black earth," 15 to 20 fold, and sometimes as much as 60 times the seed without the application of any description of manure. An exhaustive editorial article this month by the Standard, on the "Future of Siberia," states, "Wheat commanding 15*l*. to 16*l*. per ton in London may be got in any quantity for 25s. a ton in Siberia, the price of beef is 2½d. per lb., salt costing 15s. a ton in England is sold in Siberia for 15*l*. a ton. Siberian wine is as yet, with defective transport, unknown in this country."

In the language of the octogenarian chancellor on Dec. 22, 1863, not inapplicable to the existing epoch, "L'Europe nous regarde à travers un nuage trompeur, et n'aperçoit pas ce que nous sommes reellement." The Earl Derby's reply to a deputation on the Eastern Question, on July 14, 1876, can be appositely quoted as a proof of the truth of the precited prince's speech at the English Club, St. Petersburg. Röttger's Russian Review, 1876, vol. ii. p. 186, complains of the foreign Press cautioning the public against placing confidence in Russian securities. It cannot be denied that one of the greatest services which a man can render to society is to disturb it in the enjoyment of erroneous doctrines, but it is remarkable with what pertinacity the popular mind will cling to error long after it has been exposed, and with what absolute blindness it will follow its adopted leaders. To nothing will this latter remark apply more forcibly than to the so-called science of political economy, and to no branch of such more than to that which relates to the question now under discussion. As the affairs of this empire command universal attention in Europe at this juncture, it may be interesting to many of your readers to mark the honour and probity of Russia in paying with the strictest regularity the interest on the following, and all her loans, without exception:—

1822...	£6,400,000, at 5 p. cent.	1870...	£12,000,000, at 5 p. cent.
1850...	5,500,000, at 4½ „	1871...	12,000,000, at 5 „
1859...	6,468,900, at 3 „	1872...	15,000,000, at 5 „
1860...	8,000,000, at 4½ „	1873...	15,000,000, at 5 „
1862...	15,000,000, at 5 „	1875...	15,000,000, at 4½ „
1864...	6,000,000, at 5 „	1875...	4,349,280, at 5 „
1866...	6,000,000, at 5 „	1875...	1,707,930, at 5 „
1867...	12,000,000, at 4 „	1875...	1,920,000, at 5 „
1869...	11,110,000, at 4 „	1875...	4,500,000, at 5 „

Listen to the contrast as depicted by the Times on Aug. 12 last:—"While directors without let or hindrance from any superior authority in the State are allowed to run run riot with the money of the shareholders, and to recoup themselves by any arbitrary system of rates and fares they care to adopt, and while full and clear details of railway business are jealously withheld alike from the proprietors and general public, the investing classes can never have other than a speculative security, nor the trade of the country that fair play it has the right to command at all times, and which it is in special need of at the present moment." Herapath's Journal of Aug. 2 last contains the following excerpt from the speech of the Chairman of the Great Eastern Railway Company at the 34th half-yearly meeting of shareholders: "Of your passenger trains 90 per cent. are not full." I can only refer to my correspondence on the Great Northern Railway Company in your Journal of Oct. 19 and 26, Nov. 2, 9, 16, 23, and 30, Dec. 7 and 14, 1878, to show the appalling position of the railway interest. The Chairman of the London and North-Western, also of the Great Eastern, and the General Managers of the Midland, Great Northern, and Great Eastern Railway Companies have given evidence before Parliamentary Committees, proving in the most unmistakeable language that they cannot compete with water transport of coal. As shown in my letter of Sept. 20 last, coal can be delivered from the pit's mouth to consumers' premises in London at 11s. a ton saving by my system of water transport on existing prices of railway delivery, and if for a decennial period 15s. a ton. If the railway revenue in its present state be so depressed, what will be the result on the entirety of the coal traffic being dislodged? Now, investors in Russian loans have no such dread impending over them. They have a much higher rate of interest, with as great security as Bank stock.

The Chancellor of the Exchequer stated in the House of Commons on May 2 last: "The British Government did not think it consistent with their duty to interfere in the internal affairs of Russia." By the canons of international etiquette it is irregular. I challenge the most impulsive and audacious spirit—irrepressible when once moved in its anger—to produce from the vast dominion of the Czar acts against public morality having any affinity with what we have lately witnessed in the banking and commercial world of Great Britain. I shall humbly submit, in the course of this correspondence, the necessity of the State adopting such practical measures as will put the exchange and monetary system of Russia upon an invulnerable basis, and render her independent of any future foreign loans.

Little Tower-street, Nov. 26. ——— WM. JOSEPH THOMPSON.

NEW SOUTH WALES COAL MINING.

SIR,—The holders of coal lands in this country, seeking for capital in the Mother Country to help develope them, will be sure to make their special properties rank as A 1, and, therefore, a few hints may not be unacceptable to your readers, and may be of use to intending investors.

OUR SOUTHERN MINES are on the seaboard, about 40 miles from Sydney, and worked by tunnels; the coal is purely a steam one, and the demand, though good, is therefore limited more or less; but the Bulli and other companies have full employment, and pay fair steady dividends.

INLAND MINES (on our Southern and Western Railway lines).—All this coal, also, is very much of a steam coal character, and is burnt by the poorer and very economical classes, on account of its making a lasting, but dull, fire. Paradoxical as it may sound, the seams that will pay best will be the nearest one to Sydney and the farthest away from it—the latter, because it will, of course, command the trade of the great and rapidly-growing inland towns, such as Bathurst, Orange, Wellington, &c.

NEWCASTLE MINES.—These are *the* mines of the colony, containing the celebrated Wallsend seam, which being good for gas, steam, and household, all in one, always tops the market in our own colonies, and also in San Francisco, China, and India, and, in fact, makes its own market, when other sorts (perhaps really nearly as good) are not even looked at. The demand for it is so steady and great that the known portions of the seam nearest to Newcastle are nearly exhausted, and the Wallsend Company itself is the only property at work which has any really large area to work on. It does not seem, or at least is not known, to extend to any very great distance, it only having been traced as yet for a few miles across Cockle Creek and south of the Wallsend Company, and some little way inland, also from the shore of Lake Macquarie. When this portion of it is opened up it will have not only the present port of shipment at Newcastle, within easy distance (about seven or eight miles), but also the seaborne carriage *via* the Lake, which is now being dredged; and when the Great Northern Railway is joined on to Sydney, the line, as now being trial surveyed, also goes right through it. All these advantages of quality and choice of carriage, present and prospective, make it eagerly sought after, and speculators "sending home" coal properties, anywhere in its neighbourhood, will probably assert them to be "Wallsend." Therefore, let intending purchasers insist on a certificate of survey by Mr. Wilkinson, the Government geologist, or some other equally well known Government official, and also see that such survey report is stamped with the seal of the Mining Department. In the same ground there are also two other good seams of a different sort, one of them very thick, so that when the picked seam is worked out there will still be a supply of other good qualities for generations to come.

At Neweastle itself they are now going to work on one of these seams, as all the best seam is worked out for some distance (unless they work the old one under the harbour itself and out seaward, but as it is only about 150 ft. down there is some hesitation for fear of leakage); and although the Minmi, Lambton, Newcastle, and Co-operative &c. Companies are still working good seams in their respective properties, a few years more will see the best of them all worked out, and then they must fall back on Lake Macquarie district for the known superior sorts. As the annual shipment from Newcastle now is over a million and a quarter tons, and the certainty and cheapness of the supply has created a certain and increasing demand, any good sized property (say, nothing less than 1500 or 1600 acres) of the known good seams ought to be a good and permanent investment; but also let the vendor prove his faith in his own property by selling it for paid-up shares and not for cash and shares, except, of course, in such cases where outlay has been made, which the purchaser gets the benefit of.

There is also excellent coal up the Northern line, but of course every mile away from Newcastle handicaps it in comparison with the nearer Wallsend district. In short, there are coal mines and coal mines, and the difference of a shilling or two in the cost of getting it, or in the sale of it, or of 10 or 15 miles extra haulage, makes all the difference between a large dividend and a small one, especially in the outside quality ones, and in times of pressure leads to the "survival of the fittest" even; but the demand is now so large and increasing (the output last year was over one million and a half—1,576,497—tons) that the very best mines cannot supply it, and, therefore, a good deal of second and third rate coal is now disposed of, the place of which would be taken by the higher class if fully

available For the last five or six years my firm has purchased annually from 25,000 to 30,000 tons for vessels for which we are agents, and I, therefore, know what sort and quality of coal commands both the best price and the market also, and undoubtedly the Wallsend is one of the best, if not *the* best, all round coal both for the colonies and the East, and is likely to remain so. We are now about constructing another 1100 miles of railways—south-west, west, and north—and the demand for coal for that even will be no inconsiderable one, and increasing yearly as the traffic itself increases.

As regards the modern bugbear of "strikes" that need not be seriously taken into account, for coal getting is paid so handsomely as compared to all other labour that miners can always be got readily from other districts, and our Government, as well as our whole community, know too well the vital importance of the certain supply to secure us unbroken trade, and ensure the confidence of "seeking ships," that directly the late attempt at a strike took place 300 military and police, with 4 guns, were sent up in eight hours from Sydney, the new men set to work and were protected by them, and the old hands were completely cowed when they thus saw plenty of others able and willing to take their place, and the law determined to protect them and to prevent either delay to work or violence in any shape. Also, with the new improved steam and hydraulic cranes 2000-ton ships can be loaded in 48 hours with ease, and we have had the s.s. Easby take in 1800 tons cargo and 250 tons bunker coal in 36 hours even, and that more than once on an emergency.

With ordinary prudence in selecting the best seams in the proper districts coal mining in New South Wales must always be a good investment, as the population and the export trade also must increase, whilst the coal itself cannot. R. D. ADAMS.

Sydney, October.

ON COMPRESSED AIR—No. II.

SIR,—Reference was made in my letter of Nov. 15 to Sommeiller's method of cooling the air in his compressor erected at the Mont Cenis Tunnel. The piston, which worked in water, was 19½ in. in diameter; stroke, 4 ft. 11 in.; making eight revolutions per minute, giving a speed of 78·8 ft. per minute. Low's air compressor, of similar principle to that described, was adopted by the Corporation of Dublin, at the Roundwood Tunnel, for driving the boring drills. The compressor was horizontal, 14 in. in diameter, 18-in. stroke, making 22 revolutions per minute, thus giving a speed of 66 ft. per minute. The water chambers in both Sommeiller and Low's machines were of the same area in section as the compressor. The speed of the vertical water columns or water pistons would also be the same as the piston in the horizontal cylinder. But an improved form of the water piston compressor has lately been introduced; it consists in making the vertical water chambers twice the area of the horizontal cylinder. The speed of the water is thus reduced one-half. The result is said to be an increased speed of the piston, less leakage, and the avoidance of clearance spaces. Several of these double-acting machines, with horizontal cylinders and vertical water pistons, are now in operation, some having a cylinder of 24 in. in diameter, with a horizontal piston speed of 200 ft. per minute, while the surface of the water column is only 100 ft. per minute.

Sommeiller's principle of cooling the air is admitted to be an effectual one, while the result of the improvements in construction mentioned above—giving a good useful effect, moderately high speed, and a minimum of leakage—place this mode of compressing air and cooling it in a favourable light.

When a mine is to be opened out, and compressed air as a motive power is intended to be used underground, it is of the highest importance that the best form of air-compressor should be adopted, in order not only to give economical results in the production of coal, but also for the purpose of having a surplus of power ready to apply, not only to the ordinary uses of actuating hauling engines and coal-cutters, but in special cases by laying new pipes to apply this power to the raising of water, the drainage of mines, and to the clearing of drifts or galleries of foul air when an unusual quantity is evolved in the mine.

The advantages expected from the use of compressed air have not so far been realised. This arises in many cases, it is believed, from using imperfect compressing machinery, and pipes too small in capacity for the proper delivery of the air. When air compression becomes better understood the advantages it offers will be more generally laid hold of. Thus, it gives facilities for dispensing with horse labour by air-driven hauling engines, and also dispensing with severe manual labour by the substituting of coal-cutting machines, resulting in a saving in the cost of production in most cases. Considering the advantages it affords for the application of machinery in any part of a mine there need be no doubt as to its superiority in this respect to steam-power, in which system the engine must be placed either at the top or near the bottom of the pit, and hauling effected by ropes of sometimes undue length—this necessarily entailing loss from frictional resistance. But when the various applications of compressed air in a mine are considered—such as cutting coal, pumping water, and hauling the minerals, and the great store of power that may be kept ready for any emergency—there is no doubt that it will in time become almost generally introduced as a driving power, particularly in deep mines, with a high temperature prevailing, and in new mines, where the explorations can be made and machinery so applied as to bring out the system in its most favourable and economical bearing.

Of the several coal-cutting machines now used in British mines the machine patented by Messrs. Rigg and Meiklejon has given very satisfactory results. The working pressure of the air is 35 lbs. to a square inch. The machine is peculiarly adapted for low seams, and for under-cutting at the very bottom of the coal. One machine has under-cut at Penston Colliery, near Dalkeith, a length of 130 yards of face in 6½ hours shift, for many months in succession, to a depth of 3 ft., the height of the under-cut not exceeding 3¼ in. at the front. Taking into account the saving in the lessened produce of small coal, and that three men and one boy only are wanted for each machine, there seems to be ample scope for the outlay of capital and the application of engineering skill to this department of mining. The result of working the machines in the Penston Colliery is found to be that the coal is got at less than one-half the cost of hand-labour, and in the particular district where these machines are worked—the seam being thinner than in other parts of the mine—the getting of coal by operatives could not have been effected at all unless at a very great cost.

The underground haulage of minerals is to some extent effected by machines actuated by compressed air. In the case of stationary engines they can be planted in any part of a mine without detriment to the purity of the atmosphere; their effect, indeed, is decidedly to cool the air and freshen the ventilating currents. This property would be more particularly serviceable in deep and hot mines, where the ventilating currents passing along the faces of work are raised almost to a temperature corresponding to the natural heat of the strata. Locomotives driven by compressed air have lately been introduced in the Earl of Durham's Newbottle Pits. This system of underground hauling has so far been successful; the cost is about half of that effected by horse-power. The system was described by the writer in the Journal of June 7 last; it is being introduced in some other of the Earl's collieries. These locomotives have been made in various sizes—from a pair of cylinders 2½ in. in diameter, 6 in. stroke, to a pair 5 in. diameter, and 8 in. stroke. The air receivers or tanks vary in capacity from 18 to 50 cubic feet, the latter being adapted to make long journeys without stopping to take a new supply of compressed air. The air pressure at present is from 180 to 200 lbs., but a much higher pressure is intended to be used—250 lbs. or more per square inch. The charging of a tank with compressed air occupies from 8 to 12 seconds. The weight of the engine with 3½ in. cylinders is about 18 cwts. in working order. The maximum speed of one is at the rate of about 12 miles per hour, and the average speed about 7½ miles in an hour.

In considering the various purposes to which machines of this principle and construction can be applied, whether for hauling on main roads or for putting in the working places, there seems a good prospect of their being ultimately successful where the strata lie at a moderate inclination, and the rails can be kept steady, and not disturbed by any movement of the bottom or thill of the seam of coal in which they are proposed to be used. Underground haulage is too wide a subject to be done justice to in this essay. The various methods in operation would take very extensive description; an enumeration of the principal systems would embrace not only engines driven by compressed air but those actuated by steam-power and water-power; also the endless chain system, which in some cases may be made to operate by the force of gravity only, while in others an auxiliary power is requisite to give the required speed to the chain. The endless rope system also is daily becoming of so much importance and interest that it, along with the other branches briefly touched upon in this and the previous communication of the writer, will probably lead to materials for a further use of the space available for subjects connected with the development of our coal mines.

M. E.

THE "SHAKESPEAR" MINING SAFETY-LAMP PATENT.

SIR,—Will you kindly allow me to state that I shall not be prepared to deliver my lamps until towards the end of January.

Baron's Court, Fulham, Nov. 27. J. D. SHAKESPEAR.

BICKFORD'S PATENT IGNITER, AND SIMULTANEOUS BLASTING.

SIR,—We thank Mr. Barkell for his testimony in last week's Journal as to the completeness of our patent igniter and instantaneous fuse. The patent rights of that invention we shall, of course, be prepared to protect. We decline to argue the respective merits of safety fuse and straws. The acceptance of safety fuse for half a century throughout the civilised world is evidence that it is not unworthy of its name. We doubt whether there will ever be a system of blasting "absolutely free from danger"—*i.e.*, incapable of abuse by the reckless and stupid. That electric firing, as now before the public, does not merit that description is proved by the serious accidents which have been reported in connection with the use of electric fuses during the past few years, some of them occurring even when scientific hands have been employed, and those to which we refer would not be affected by the use of any particular firing machine.

Tuckingmill, Cornwall, Nov. 26. BICKFORD, SMITH, AND CO.

DIFFERENTIAL PRESSURE INDICATORS.

SIR,—It is not many years since it was generally admitted that in the production of steam-power only one-eighth of the power which theoretically ought to have been obtained from the fuel employed was utilised; and although I suppose there has been some improvement in the last few years, there is still ample room for getting twice the power which now represents the average for each pound of fuel burned. The correction of defects in furnaces, boilers, and engines can only be hoped for by knowing what is going on inside; and, therefore, with regard to engines, I think the suggestion of Mr. Robert Willis, of Leadenhall-street, is undoubtedly a good one, since he proposes to indicate at all times, if desired, the maximum, minimum, and mean pressure of steam in the cylinders of engines by a pointer on a graduated dial, and when using varying pressures of steam from the boiler, or when the pressure is varied in the cylinder by the use of any system of cut-off valves; it also shows any improper set or irregular working of the steam-valves, particularly where more pressure is admitted to one than the other end of the cylinder. The indicator is really very simple. Two chambers of any form are used, one of which is kept in constant communication with the steam end of the cylinder while in use by means of the automatic working of a double valve, placed in a suitable position between the chambers. The valve is worked by the pressure of steam from the cylinder alternately acting on each end of it, so that it closes the communication of the chamber with the exhaust end of the cylinder, and opens communication with the steam end thereof.

The body of the indicator is usually a strong metal cylinder about 5 or 6 in. diameter, a diaphragm across the centre forming it into two chambers; an opening is made through this diaphragm from side to side of the indicator, admitting steam from the cylinder, and receiving the automatic double valve for alternately admitting steam from each end of the cylinder, and closing communication with the exhaust end. Two small openings are usually made to place the lower chamber in the body of the indicator in steam communication with the cylinder by the valve and steam passage in the diaphragm. The other chamber, which is generally the upper one in the indicator when it is set in position for working, is put in communication with the lower chamber by means of an opening or openings made in any suitable part to the diaphragm, and provided with an adjustable valve or valves made to open into the upper or lower chambers for increasing or diminishing the area of the said valve openings between the two chambers, for showing the maximum, minimum, the mean pressure of steam in the cylinder at any time or point of the stroke of the piston. For obtaining the mean pressure the area of the valve opening is contracted sufficient to cause the pointer on the indicator dial to vibrate but little, or to come to rest, and the pressure marked on the dial between the two points of vibration will be found the mean pressure in the cylinder. It is necessary to use suitable mechanical means for moving and holding the valve in position, so that the area of the valve opening may be increased or diminished to the smallest possible degree, and retain it at any desired area by the proper working of the valve.

The indicator is usually placed at an equal distance between the ends of the cylinder, and put in communication therewith by means of pipes and cocks; when not in use, or for other purposes, the communication is shut off by the cocks usually placed at some convenient part in the pipes or indicator if desired. In putting the indicator to work, the lower chamber is usually supplied with water or other liquid for the steam pressure to act on; the water is forced from the lower to the upper chamber through a pipe extending nearly to the bottom of the lower chamber, and connected with the regulating valve opening, by which the two chambers are put into communication in the manner before described. As the water is forced to the upper chamber, air is trapped in the upper part of it, and thereby gives an elastic resistance for the steam pressure to act on the indicating mechanism for moving the pointer on the dial. If desired, the water or liquid may be dispensed with in the indicator chamber, and the steam permitted to act direct on the indicator mechanism for showing the pressure. By the use of steam alone the indicator would be more sensative to slight variations of pressure, and consequently act quicker, and more likely indicate the true pressure of steam of all times. When using steam alone in the indicator chambers, means must be employed to keep both chambers free from condensed steam. It will at once be understood the indicator readily detects not only any defect in the set of the in eduction or eduction valves, but shows if more steam is admitted to one end of the cylinder than the other, and altogether whether there is any stoppage impeding the proper action of the engine. EXPANSION.

City, Nov. 24.

THE FLAGSTAFF SILVER MINING COMPANY OF UTAH.

SIR,—My attention has been directed by several shareholders of this company to the statement contained in my letter in last week's Journal as to the amount of the company's indebtedness in Utah, in which I find that a cipher has been omitted. You will find on reference to my original letter I used the figures 30,000*l.*, *not* 3000*l.* as printed. Kindly make this correction in your next Journal.

London, Nov. 26. A. A. DE METZ, Secretary.

RUBY CONSOLIDATED MINING COMPANY.

SIR,—One of the daily papers in reporting the above case, which was heard on the 26th instant, states that Mr. Hartmont, late a director of the company, said in his evidence—"He promoted the company under Mr. Delbanco and myself," Mr. Delbanco being practically the only defendant in the action. I can scarcely think that Mr. Hartmont's evidence has been correctly reported. As a matter of fact I had nothing whatever to do with the promotion of the company. I never heard of the terms of the secret agreement, on which the action was founded, and I did not even see the prospectus until it appeared in the daily papers. If proof be needed let me recall to Mr. Hartmont's memory (always assuming that he has been correctly reported, which I scarcely credit) the fact of his having withdrawn a suit he commenced against me some years ago, in which he tried to make me out a co-promoter, he consenting to pay my costs, As there appears to prevail amongst shareholders and others an opinion that the Ruby Company was not promoted in a manner which reflects great credit upon those who were connected with its inception and promotion, I trust you will allow me to give my version as above in your valuable Journal.—*London, Nov.* 27. EMIL OPPERT.

CAPE COPPER AND PANULCILLO COPPER.

SIR,—You kindly inserted in the Journal of the 8th inst. a letter from me headed "Panulcillo Copper," a property in which I stated the profits of the company now being made were equal to a dividend of 1*l.* per share per annum, and that the shares, then quoted at 3¾, must go to their former price of 6*l.* or 7*l.* at least. In the week following you inserted a letter from "A Permanent Shareholder," whose calculations of the profits now being made exactly corresponded with mine, and last week you published a letter from "Caution," warning your readers that those calculations might be too sanguine, because the Panulcillo bought about one-third of the ore smelted, and, therefore, the company would have to pay a higher price for the ore purchased, equivalent to the late advance in the price of copper. "Caution" may or may not be right in this view, and I will give him the credit of being right, notwithstanding which I think the following figures will prove that my estimate of the company's profits being fully 50,000*l.* a year—equal to 1*l.* per share—is substantially correct.

The Chairman stated at the meeting on the 3rd inst. that the profit for four months of the current half-year was 13,500*l.*, or at the rate per annum of 40,500*l.*, and that "this profit had been realised without any benefit being derived from the recent rise in the price of copper." Now, the quantity of pure metallic copper in the regulus sold by the company for the year ending June 30 last was 2880 tons; this year I estimate the quantity of pure metallic copper contained in the regulus to be sold will, in consequence of the increased productiveness of the mines, and the facilities afforded for extracting the ore by the completion of the San Gregorio adit, amount to 3000 tons, and of this 3000 tons I will presume the company purchases 1000 tons, on which it will not realise any profit from the advance in the price of copper, so that the additional profit will have to be calculated only on 2000 tons of metallic copper. The price of Chili bars last year ranged from 57*l.* 10s. to 53*l.* 10s. per ton, and the unit, or 100th part, of a ton of copper from 10s. to 11s. 6d. Now the unit is worth 13s. to 14s., but I will only take the advance as 2s. per unit—equal to 10*l.* per ton of metallic copper—this, on 20,000 tons, is 20,000*l.*, which, added to the 40,500*l.* per annum, the rate of profit made for the first four months of this half-year, without any benefit being derived from the recent rise, makes a gross profit of 60,500*l.* per annum, sufficient to pay 1*l.* per share dividend, and leave 10,500*l.* to pay the principal and interest of the debentures, and the London expenses of management.

Your readers will ask—What has this to do with the Cape Copper Company? Why, my object is to compare the latter with the Panulcillo Company, and to demonstrate more completely the very absurdly low price at which Panulcillo shares are still selling, although they have advanced 30s. per share since my first letter. Cape Copper shares paid a dividend of only 10s. per share for the quarter ending September last, or at the rate of 2*l.* per share per annum. I calculate the advance in the price of copper at 2s. per unit will enable the directors in the course of the next six or twelve months to resume the payment of quarterly dividends of 1*l.*, or 4*l.* per share per annum. The price of Cape shares is 33½, the price of Panulcillos is 4¾; so that seven Panulcillo shares (on each of which I think I have clearly proved a dividend of 1*l.* per share per annum is as likely to be paid as 4*l.* per annum is on Cape shares) can be bought for 33*l.* 5s.; in other words, seven Panulcillo shares, giving in all probability 7*l.* a year in dividends, can be bought for 5s. less than one Cape Copper, giving in all probability only 4*l.* a year dividend. If "Caution" still disputes the accuracy of my calculations, I am ready to give him the dividends on one Cape Copper share for the year 1880 in exchange for the same year's dividend on seven Panulcillo shares.

I think, with these statements before them, your readers will incline to my view of the value of Panulcillo shares rather than that propounded by "Caution." A SHAREHOLDER.

PANULCILLO COPPER COMPANY.

SIR,—I must confess, Mr. Editor, that "Caution's" letter in last week's Journal has rather surprised– nay, puzzled—me. Who is "Caution?" Evidently he (or she) is not a shareholder in the Panulcillo Mine, as no one is so short-witted as to write against his own property. Is, then, "Caution" one of those rare philanthropists who write only for the benefit of the human race, desiring to depress shares solely for the public weal? If so, I can but regret that the *res publica* has, in this case, such a weak-kneed champion. His argument is of so rickety a nature that there seems hardly any need for me to caution against "Caution."

He accuses me of magnifying, but people in glass houses should not throw stones. Lo! how he exaggerates himself—for the public weal! It is certainly wrong to extol beyond measure (I decidedly did not do so), but to disparage unreasonably and immoderately is not much better. Caution is very useful in itself, but one can also be too cautious, and thereby fail to reap the benefits of the bold. Faint heart never won fair . . . profits. I dare say "Caution" never bought Tharsis or Cape Copper shares when they were low—it would not have been prudent to do so. Nor will he, I suppose, purchase Panulcillo shares until they are 10*l.* each, which event must, in my opinion, happen within two or three years hence, and may happen even earlier. Well, all I can say is that "Caution" will once more miss the opportunity of doubling or trebling his capital within so short a period.

Now, let us examine some of "Caution's" weaknesses and inaccuracies. He says that any rise in Panulcillo above 4*l.* should be based upon 1881, and not upon 1880. He may base the rise above 4*l.* upon what he likes, but I, at any rate, did not base my calculations and expectations upon 1880 alone. Read my letters. Next year I do not expect more than 10 per cent. upon the par value of my shares, unless, indeed, copper has a further rise, which is very probable. But if I do not expect more than 10 per cent. dividend in 1880, I also do not expect less; 10 per cent. would take 20,000*l.* The net profits being at present (see *Mining Journal* of Nov. 8 and 15) at the rate of 50,000*l.* per annum, there would still remain 30,000*l.* to wipe out the floating debt and provide for contingencies, including the imaginary ones of "Caution." In 1881 I expect to get what he calls a "full dividend." Well, I will call it, in plain English, 25 per cent. at the least, which is no exaggeration considering (1) that Panulcillo now makes net profits at that rate; and (2) that there is every likelihood of an increase from a still more economical working of the mines, in consequence of the introduction of Holway's process, which I understand is in contemplation, so that copper prices in 1881, according to all human foresight, will be considerably higher than those now current. Taking the present output as a basis, a rise of 10*l.* in Chili bars makes a difference in favour of Panulcillo of (say)—keeping on the safe side—15,000*l.* per annum, representing a dividend of 7½ per cent. on the share capital. Now, "Caution" may say what he pleases, but to aver that shares with such prospects (10 per cent. dividend in 1880 and 25 per cent., or probably more, in 1881) should at the end of 1879 only be worth par, is really too maniacal even for cautious people to maintain. I should say double that price—8*l.*—would be nearer the truth. At any rate, there can be no earthly reason why Panulcillo shares should now be quoted or be worth less than before the depression, when the current price was 6*l.* to 7*l.*

"Caution's" remark that the net profits for four months ending Oct. 31 last, wired from Chili at 13,500*l.*, are only approximately correct, and may be modified by the results of working in the subsequent months, is really most puerile. We all know that, but we can only base our calculations upon what *is*, not what *may be*. I wish to live and see Panulcillo at 10*l.* each, but *if* I die (and that is not impossible), then, truly, I cannot. With such "ifs" no bank, no railway, no man of business could possibly make any reasonable estimate. Once assuming what is not, why does "Caution"—with more justice than

common sense—not assume at least what is most probable, rather than his doubtful contingencies? I cannot see a single reason why the subsequent months should not show even better results than those above mentioned. Nor does "Caution," I suppose. Again, what does his assertion that the net profits at 13,500*l.* are only approximately known imply? Does he mean that they may turn out less? Why does "Caution" not charitably suppose more? The latter is much more probable, since the Panulcillo people are prudent, and sure always to keep on the safe side. As an instance I only mention the fact that the net profits for six months ending June 30 last were wired in July from Coquimbo at 11,000*l.*, but in the profit and loss account just issued these profits are set down at 11,190*l.* It is, therefore, both fair and safe to predict that the 13,500*l.* above mentioned is more likely to be exceeded than otherwise.

Finally, as regards loss on Exchange, and Panulcillo being "shut out" as to poor ores, it is a great pity that "Caution" did not remain true to his *nom de plume* to the last, and enquire first at the company's office before rushing into print to utter totally incorrect statements. The disturbance in the Exchange has hitherto not only not affected Panulcillo interests adversely, but has, on the contrary, been rather beneficial on the whole. Besides, any disturbance of the sort can be but temporary. With the decisive Chilian victories, the war is practically at an end, and with peace the normal state of affairs must soon return.

A PERMANENT SHAREHOLDER.

PANULCILLO COPPER COMPANY.

SIR,—As "Caution" has challenged the statements of "A Permanent Shareholder," may I, in turn, demur to some of his opinions? When "Caution" states that increased freights, &c., will about counterbalance the recent rise in copper prices he takes, I think, a much too adverse view. The consumption of coke and coal at Panulcillo may be put down at 10,000 tons per annum. A rise, therefore, in freights of 10s. per ton would mean an extra annual charge of 5000*l.* But even supposing such a rise to be maintained, it would not be felt by the company till June or July—say, when the existing cheaper fuel had been worked up; and were it otherwise the extra charge would be almost met (1) by the saving of the S. Gregorio tunnel, estimated at 3000*l.* per annum; and (2) by the reduced debenture intesest of 800*l.* per annum. The statements made as to increased cost of carbonate ores are, too, I think, misleading. It is quite true that bar copper (for a very short time) did advance in Chili to $23, and that the latest cablegrams report the price back at $18; but the rise to $23 was so short and so fictitious that it may fairly be hoped neither Panulcillo nor any other establishment will have based their ore purchases on such a price. In any case it may be said that the return from $23 to $18 was not quite so rapid as to bear out "Caution's" conclusions. The more probable result seems to be that the temporary extreme prices will have led to a resumption of copper mining, and that as a consequence the area of supply (which was before becoming inconveniently small) would be largely widened, to the ultimate benefit of Panulcillo and other smelting works. Then again, as to the exchange, it is well to remember that though it has been as low as 24½d., the last advices report a rebound to 34½d., and with the continued Chilian successes we need hardly fear any reaction. If so, the competition for carbonate ores may diminish at the same time that the losses to the company from exchange would be very materially lessened.

The annual production of fine copper at Panulcillo may be taken at 2300 tons; and supposing only half of this was the produce of the Panulcillo Mines, the advance on last year's prices (taken at 10*l.* per ton) would mean an extra annual gain of 14,000*l.* Believing that the recent rise in copper will be at least maintained, I am disposed to estimate the present net earnings of Panulcillo at about 30,000*l.* per annum. With such a profit we may look in the new year to the remaining balance at debit of profit and loss (19,300*l.*) being extinguished, and to a balance of 10,000*l.* being available for dividend. With similar results in 1881 the whole of the 30,000*l.* would be available for division, and in that year we may hope to see the debentnre interest reduced to half—say, 2000*l.* One's confidence in such results becomes strengthened when it is remembered that we are emerging from a long period of depression in trade, and that by dint of science and tenacity the works at Panulcillo are at present most complete, and for the first time in a position to take full advantage of fair prices for copper.

IMPARTIAL.

ROCK-BORING —THE DARLINGTON DRILL

SIR,—Is it possible that Mr. Waddington could have been responsible for his actions when he penned the letter published in last week's Journal? If so he deserves the reprobation of every right-thinking man. If not he is indeed to be pitied. No gentleman in his right senses ever gives the lie to another; but should he so far forget himself as to do so he forfeits his claim to be such, and must put up with the consequences. Now, what has called forth such an outbreak of venom, fury, and malice? Nothing more than my saying (which I still say is the fact) that although the Darlington drill was twice entered for the purpose, still it had never competed in the trials held by the Mining Institute of Cornwall, and that the excuse given last year by Mr. Waddington was that the clamp for fastening the drill to the column was forgotten. Why, Sir, two or three dozen of the spectators at the trial in question heard him make the excuse, as well as myself. Indeed so much spread abroad was the fact that several gentlemen came from the northern part of the county specially to witness the working of the Darlington drill, and were much disappointed when they found that they had undertaken the journey for no purpose. I may add in regard to last year's meeting of the Institute that the Darlington drill was exhibited in the Hall at Camborne and on the afternoon previous to the competition it was taken away to Wheal Agar for a private trial, with what result was very apparent, when the drill was conspicuous by its absence at the time of competition. In conclusion, allow me to inform Mr. Waddington that he is expending his fury to no purpose so far as I am concerned. All that he has earned by the publication of the letter in question is the title of being a fussy, meddlesome man.

Pool, Nov. 26. H. WILLIMOTT.

ROCK DRILLS.

SIR,—The letter of Mr. Shaw, which appeared in last week's Journal, must be characterised as an ungracious and selfish attack upon a well-known and meritorious machine. The evident object of Mr. Shaw's language is to force upon the attention of the public his machine, to give it an apparent value, and to bring it into notoriety by the stale device of decrying the merits of an invention superior to his own. To be quite sure that Mr. Shaw is truthful in his asseverations let me ask a question. Have any six men at the Tarlargoch Mines, for a continuous period of three months with a single Shaw drill, driven from 22 to 23 yards weekly in the ground of that mine? Will Mr. Shaw pass from praising his drill, and state clearly and concisely what has been accomplished through its agency at the Tarlargoch Mines? How many drills are employed in a single forebreast, what are the dimensions of the level and the hand price of driving the ground, and what number of men are employed per shift? Then let him state the cost of compressing air for the drills, the number and aggregate depth of holes bored per lineal fathom, the total cost of driving the ground per fathom, and show the rate of speed and saving effected as compared with that of hand labour.

With the Darlington machine we have these and a much more extended class of facts, and we happen to know, through the Journal, that a single drill is handled by a company of six men, so as to drive some 12 yards of ground weekly, at a total cost much below that of hand labour, while we have the testimony of Mr. Waddington as to the great economy and efficiency of the drill at Wheal Agar, in Cornwall, where it is employed in driving ground the hand price of which is 22*l.* per running fathom. Facts of this kind, backed up by full statistics of results, are what your readers require, not the misleading boasting of individuals about their drills. Mr. Shaw knew when he wrote his letter that anyone might take his drill and lessen the force of the blow at least 50 per cent. simply by neglecting to keep the piston fairly tight, and that the rate of speed of any given work might be diminished one-half or more by placing the drill in the hands of untrained men, or in a level or shaft where interruptions might be long and frequent. It is to be deplored that so complicated and important a subject as the application of rock-drills to our mining operations should be almost irremediably injured by the unfair and distorted language of various inventors. For the mere love of selfish gain many of them will not hesitate to resort to plausible and mendacious statements, not caring how it may affect the interests of others. The machine drill is entitled to become a boon to the miner, and any species of tactics of this or that drill maker which is prejudicial to its extended use deserves severe and hearty reprobation.

London, Nov. 26. F. KIMBER.

ROCK-BORING MACHINERY.

SIR,—Your correspondent, Mr. John Shaw, shall have direct replies to his letter.—1. Mr. Darlington is interested in the success of this property.—2. He devised the rock-boring apparatus employed at these mines.—3. I have commended the Darlington drill because I have had a lengthened experience of its complete efficiency and value, and am desirous that other people may adopt such a genuine article.—4. I have given exact particulars of the work done at this place, both as regards speed and cost, by means of the Darlington drill, and if Mr. Shaw has any doubt of their accuracy he may examine the weekly statistical accounts bearing directly on the subject which are kept at these mines, and inspect the work done underground. If he is not competent or disposed to do this, I can refer him to an unimpeachable authority who will, I am sure, in the interests of truth willingly corroborate my testimony, especially as Mr. Shaw insinuates that I am pandering to the wishes of Mr. Darlington by frequently championing his drill. I may say, however, for Mr. Shaw's particular benefit, that I am not in the employ of Mr. Darlington, but of the directors of Rushen Mine, and they are gentlemen who would very soon call me to account, and insist on my accomplishing the work I fearlessly assert the Darlington is capable of doing. Further, my experience of rock-drills is not limited to the Darlington, and if it were I have the opportunity of comparing the work done by it with the results obtained by other drills, which, after all, is the crucial test of any drill.

Having disposed of Mr. Shaw's questions, let me in turn enquire if he will give particulars of work done by drills on ground the hand price of which is not less than 7*l.* 10s. per lineal fathom, and the number of hands running the drill not exceeding six men in the pare, and the length of ground driven not less than 100 fms. The items required are—time consumed in doing the work; actual and complete cost of same, including the entire cost of compressing the air, and the relative hand and machine price of the ground per fm.; or, still better, induce the manager of the Talargoch Mines, for example, to furnish the particulars requested, as I am sure the directors of this mine only desire to employ the best machines for speed and economy. I know nothing of the drill supplied to the Talargoch Mines, but I do know that the success of any drills will mainly depend upon the skill and knowledge of the parties who may work them. In this essential Mr. Shaw, being a large contractor, may be well provided, but that he has a better drill is very problematical. The superiority of his drill consists, from his own statement, in boring faster and using less air. Can this be the case when Mr. Shaw some time ago, on being asked his opinion as to the surface arrangements at a certain mine, where his boring plant was proposed to be laid down, suggested that the compressor should be driven by a belt from a 20-ft. diameter fly-wheel of an engine working at least six strokes per minute?—*Rushen Mine, Nov.* 25. J. BARKELL.

DARLINGTON AND ECLIPSE ROCK-DRILLS.

SIR,—In the Supplement to last week's Journal Mr. Waddington refers to some correspondence of a year ago, also more recently, respecting "false statements" about the Eclipse drill. The "statements" which he quotes have only originated from himself. A well known saying which he employs is a "cap" well fitting his own head, and which, I fear, he will not be disposed to replace for what is better for a long time to come. One valuable commodity has been but sparingly bestowed on him. Mr. Darlington and Mr. Waddington both contradict that the Darlington drill was entered for working at the Mining Institute Exhibition. In answer to this I will say that a notice of this drill, with the others to work at the Wheal Agar trial, appeared in several of the local and other newspapers, also on the circulars and large bills in connectien with the Mining Institute exhibition of the present year. Mr. Waddington asks "How many fathoms has the Eclipse driven in the adjoining mine, East Pool?" To satisfy him I will give him an account of the work done by each size of the Eclipse drills which have been used here.

One 3-inch Eclipse drill drove in four weeks 7 fms. 4 ft. 5 in.; in another four weeks two 2½-in. cylinder Eclipse drills drove 12 fms. 4 ft.; this drivage has been effected on the same lode as two Darlington drills are driving between them 2 fms. per week, notwithstanding the cylinders of the latter drills are of 3¾ and 3 in. diameter respectively. He also asks, "What did the Eclipse do at West Basset?" At this mine I may say that one 2½-in. Eclipse drill drove 100 fms. of levels in a little over nine months, at a price of 10*l.* per fathom. This work by the little hero is admitted by the authorities of West Basset to be considerably over twice the hand speed, and has given such great satisfaction that they have entered into another contract with the Messrs. Henderson and Son, of Truro, to drive some of their hardest ground with the same drill. One of the levels where this drill has been employed recently is being continued by miners at 13*l.* per fathom. As such an amount of work is being done by the smalier sizes of the Eclipse type—and which would be proportionately increased by the larger sizes of this make—I see no reason why Mr. Waddington should give rise to as much spite as he has shown in your columns from time to time, using such terms as "toy" and "bellows," except it has been that he cannot develope his mine as fast as his neighbours with very much larger machinery of another make. If he has got hold of the wrong machinery it is his own misfortune, and not the fault of either the makers or agents of the celebrated Eclipse, which has obtained for itself the highest awards hitherto given at any exhibition.

Mr. Waddington explains his challenge as one week's drivage in the 225 fm. level at Wheal Agar with the little Eclipse, and then to run Darlington's drill for one week, the rate of driving with the respective drills to be "the practical solution of the question." This would suit our friend very nicely, but no one in Cornwall would be so unwise as to leave the business of the contest to be conducted by such an opponent, and on his own ground, but would prefer having the contest carried on in an independent mine, and were true results would be recorded. I think that a contract might be arranged to drive ftom 300 to 500 fathoms of levels at Wheal Agar with the Eclipse even below 17*l.* per fathom, the price which Mr. Waddington offers, and say is only equal to 75 per cent. of the price formerly paid to drive by hand. Far more than 2 fathoms per week could then be driven by the 3-in. Eclipse "toy;" such an arrangement as this would be the means of a rapid development of the mine, which alone can satisfy adventurers.

My letter which appeared in the *Mining Journal* of the 15th was a little in error on one point—in stating that the Darlington drill which was worked on the "test" rock at Wheal Agar on Nov. 14 was of a 4-in. diameter piston; regretting this little mistake, I would say that it has since been measured and found to be of 3¾-in. diameter, or a little below what I previously stated. Mr. Darlington and Mr. Waddington each in correcting me should have shown more fairness by at least admitting that the Darlington drill had a 3¾-in. piston, and should, as everyone knows, have nearly doubled in a given time the work of a 3-in. drill. It is possible that Mr. Darlington's engineer did not come down to superintend his drill at the "trial;" but, accepting this statement, who had the drill sent to the foundry after the unsuccessful private run on the morning of the contest day? And was not the drill returned by the foundry company without being even examined, and shortly afterwards brought to the shaft's mouth instead of on the contest ground? I again say that the value of one kind of drill over another is only in proportion as the work it accomplishes as compared with other drills of a similar size, consistent with a minimum amount of air used; hence saving of fuel, and general economy.

On the question of actual work done by the Darlington and Eclipse drills at the respective trials Mr. Waddington has expressed himself in a very ridiculous manner. He has plainly shown that he knows little or anything of boring holes or purchasing of borer steel, for he buys steel at 30s. per cwts., the consequence of which he has stated to be that the bits break of in the holes, so as to present a cutting face ⅝-in. broad. It is a fact well known to all the gentlemen who took part in the business of the late public contest at Wheal Agar on Oct. 30 that the Eclipse drill was worked only with a pressure of 58 lbs. of air, therefore there is no reason for his using the term "usual pressure," the actual pressure only he ought to mention.

Mr. Waddington, again, is trying to express envy of the Eclipse by attributing its success to the using of it by "trained men." In reply to this I beg to say that the "trained men" employed by the Eclipse ever since it has been in Cornish mines have not been other than good Cornish miners. Some individuals who have had unsuccessful boring machinery in their mines have often indulged in abusing these intelligent men, by calling them "blockheads" and "thickheads." Had the Eclipse toy and bellows been applied at these mines instead less "Cockney and Yorkshire slang" might have sufficed, and instead of an interval extending over some years through a "breakdown" a good development would have been attained. "Trained" mechanics are only required for complicated and clumsy machinery, a specimen of which may be seen in a mine not far distant. For Mr. Waddington's welfare I would mention that the steel used by the Eclipse at Wheal Agar was supplied by Messrs. Cornish and Co., Red ruth, at 42s. per cwt., and not over 60s. per cwt., as he thought.

If Mr. King has a single Darlington drill "driving 1 fm. per day in greenstone 250 fms. off from a shaft," it is strange that two drills of the same kind are only driving at Wheal Agar 2 fms. per week near a shaft. I think that this is a "greenstone" of a new variety, and known only to Mr. King himself. As far as I have seen the Darlington drill my opinion is that the Eclipse "toy and bellows" will do far better, even in Cornish mines, or at the Rushen Mine, where a certain drill is weekly "cried" up for its wonderful performing qualities.—*East Pool Mine, Nov.* 27. HARRY TEAGUE.

PATENT ECLIPSE ROCK-DRILL AND RELIANCE AIR COMPRESSOR.

SIR,—As dear Mr. Waddington has been good enough to reply to our letter of Nov. 12, we now beg to answer him. We accept his (Mr. Waddington's) challenge, but do not intend our acceptance to be palmed off upon our agents, for we can champion our own rights without the aid of any other man or men. That we have full confidence in our agents is beyond a doubt, but to delegate a matter to them which should be borne and carried out by ourselves would be to show the white feather. Let Mr. Waddington fully understand, once and for all, that we are prepared to send a drill into Cornwall or anywhere else, and place it in the hands of disinterested parties to work against any other drill, Darlington or otherwise, for any period and for any sum of money as a stake that Mr. Waddington may choose to name—the said stake to be placed in the hands of the Editor of the *Mining Journal* (if that gentleman will accept the office of stakeholder), and if not, in the hands of some other responsible person, to be paid over to the owner of the successful drill at the conclusion of the competition.

As Mr. Waddington has thought fit to sneer at and abuse our machines, we claim the right to defend them, and had not he commenced a tirade against our drill and compressor we should never have taken the trouble to give him cause of complaint, but if he will play with edged tools he must expect to get his fingers cut. If Mr. Waddington expects us to stand by whilst his delusive statements are thrown broadcast, he has counted without his host. What surprises many others, in addition to ourselves, is that Mr. Waddington should lend himself to such a line of conduct seeing that no earthly good can be derived from it. So far as the letters of H. Willimott and Harry Teague are concerned, we think they need no comment on our part. These gentlemen will no doubt answer for themselves. In regard to Mr. Waddington's statement as to the doings of the Eclipse Drill at East Pool and West Basset, we will leave the reply to come from our agents, who no doubt will be able to answer the evil aspersions of that highly educated individual.

We think, Mr. Editor, you will in all fairness aquit us of any intention of decrying down our rivals' machines, or of taxing the proprietors of them with any improper motives. We do not answer Mr. Waddington in the light of a proprietor of any drill or compressor, but simply as an outsider who is labouring under some delusion in regard to the merits of different drills. We would advise that gentleman, however, to make himself thoroughly acquainted with the merits of boring machinery before he attempts to pronounce judgment, for if anyone can bring ridicule upon himself it is by discussing matters he is ignorant of. It is an old proverb, but no less a true one—"Where ignorance is bliss it is folly to be wise." We feel inclined to think this is the case with Mr. Waddington. We must now leave that amiable gentleman to rave and fume as he thinks best. He certainly can do us no good, even were he inclined to do so, and we will take good care he does us no harm.

London, Nov. 26. HATHORN AND CO.

PATENT ECLIPSE ROCK-DRILL AND RELIANCE AIR COMPRESSOR.

SIR,—In reply to Mr. Barkell's letter, which appeared in the Journal of Nov. 18, we challenge that gentleman to name the mine where the Eclipse Rock-Drill was set to work, and afterwards given up. Mr. Barkell's reply will allow the mining public to judge as to how much faith can be placed in any statement coming from such a source.

London, Nov. 26. HATHORN AND CO.

CIRCULAR "SPECULATORS," AND THEIR PROCEEDINGS.

SIR,—I trust you will excuse me troubling you, but I take a great interest in honest mining, and do not believe in mine jobbery, and wish to make some comments thereon. I regret to see the influence that a few unscrupulous men can have on the Market—men who often have neither position or property to lose, who by sheer trickery frighten people out of their money. I notice that a few of these have been at their old dodge during this week—offering shares at less than the market price, and in such numbers as to glut the market, and thereby frighten timid people into selling their shares at any price. It does not follow because the shares are advertised that they have them for sale—in nine cases out of ten they have not a share; their object is not to sell, but to buy, and at a price that fair, honourable dealing would not allow of. Only try to buy of them at the prices they offer before the panic sets in, and you will find that they either say "the shares are sold," or sell for forward in the hope of being able to buy from the timid ones who rush to sell at once when they see the prices of their shares down, and thereby play into the hands of the schemers. I have often found it so. This week I notice one party in particular who sold me some shares at a low price a few weeks since, and on my pressing him for the delivery of them according to our contract, declined to deliver them at all. I find, although he is a man who advertises largely, and publishes pamphlets, &c., that he is comparatively worthless, so if I sued him I should perhaps be only the worse off. I notice him this week offering some hundreds of shares at prices at which he could not supply them unless he is aided by the rush of sellers into the market, who thereby help him and the men he works for. No doubt that party will secure the shares they want at their own prices, and perchance, next week or so, when the handle turns the other way, up go the shares to their old prices, and the old holders are chagrined to see the success of the plot in which they were the unconscious helpers. I should have thought the recent case of Wheal Crebor would not have been forgotten so soon; in that case the shares in one day dropped some 50 per cent., all through the dishonest means employed on the Market. How do the sellers at the bears' prices now like it? Would not they like to have them back at double what they sold them for? No doubt in a week or two many who are now so very anxious to sell such unexceptionable shares as Roman Gravels, Tankerville, West Chiverton, and other such like first-class honest mines, which are at present so recklessly offered by men who do not hold them and have nothing to lose, will be quite as anxious to buy them back, but then they will have to pay for their experience. Let holders before they thrust their shares on

the market look at their prospects. Why, the advance in lead has only commenced. Let spring come, let building begin, painting and repairs be made good, which have, owing to the bad times been put off till times mend, but must soon be done; let the various uses of lead, which have of late years been curtailed, take their old sway, and hundreds of thousands of tons of lead will be required over and above the late consumption. Then, again, the hearts of shareholders will rejoice. Let holders of good shares in good mines hold them. Do not part with them; keep out of the market except to buy, and do not buy above your means, and then insist on an immediate delivery. If shareholders only did this, and acted as rational beings, instead of like a flock of frightened sheep, the above mentioned and other equally good mines would not be at the price they are to-day.

Now, Sir, allow me to thank you for your remarks under the Share Market heading, in last Saturday's Journal, about the valuation of ore in mines, it is a subject well worth enlightening the investing public on, and I hope your readers will note it. Also as to the letter of "C. T.," in the same Journal, on Wendron Mines. I can only say as to one mine that, if I may judge of all the shareholders as I feel myself, it will be a long time before they again lose their cash in it. When it was first brought under my notice, and I first lost my money by it, the sum of 800*l.* was to make it "no speculation," but a "positive certainty." Now, after spending presumably 7500*l.* to no profit, we are recommended to make our fortunes in it by the aid of a borrowed engine. No, thank you; let us try and get back some little of the cash, and the best plan is to wind up, but without an engine. If that is not done soon all will be lost.

J. B.

THE UNITED VAN CONSOLS AND GLYN COMPANY.

SIR,—My attention has been drawn to some letters in your valuable Journal respecting this company, and also to the remarks made by the Chairman at the meeting held on Nov. 7. These have greatly surprised me; from what the Chairman stated it appears the directors of the United Van Consols Company have made the company responsible for the payment of the Van Consols debts and costs of liquidation, which has now been going on some two years. I also notice from the Chairman's remarks that on the advice of the solicitor the directors have sanctioned the commencement of four suits (or actions, as he terms them) against four parties, which appear to be speculative suits on points of law.

I have noticed, from circulars sent me by the board, that there are two firms of solicitors, two or three firms of public accountants, and three liquidators, with their solicitors, engaged in these matters. As all these gentlemen will take care to be paid their regular professional charges, I can fancy where the greater part of our new capital (over 11,000*l.* lately called up) has gone or is going, while so little has resulted from working the two mines—only 15 tons of lead in some 2½ years.

The Chairman did not inform us of the amount of these debts, or the costs, or how we became liable. Will the managing director (who is, perhaps, also one of the liquidators) state the real facts of the case through the medium of the Journal, so that I and other anxious shareholders may be satisfied all is right? AN ANXIOUS ENQUIRER.

Nov. 24.

SOUTH FRANCES MINE.

SIR,—I think it will be well for this company to understand their position relative to the coming winter, and know how far they are liable to be drowned out. If I am rightly informed last winter there was a period when the bottom levels in South Frances were under water for fourteen weeks out of the sixteen, and the next eight weeks out of the sixteen. The former was duly and faithfully reported to the company by the agent; but the nice dividends tickled their ears, and blinded their eyes. "Go on as we are." This was prominently brought before them at the last meeting by an old shareholder, who had the interest of the mine at heart. The reply was—"Nay; we have done very well the past eighteen months—we will go on eighteen months longer (query?) before cutting down the shaft." Now, the folly of this will be seen two ways—first, during this winter they will no doubt be hindered by the water again as the springs rise, and may be driven out with the first accident; secondly, as has been shrewdly pointed out, dividends will be given up to a certain point. How far that is off should be ascertained at the meeting next Tuesday—the 180 fm. level and stopes from the boundary. I recollect Capt. Nicholls many weeks since appeared in my sight with such a strange look, the cause being I fancy South Frances had encroached on them once more, and they could not afford to lose a pound of tin. Quite true—their work being task enough for them. I see from this they are both close to their boundary—South Frances then 7 fathoms only; where must they be now? With this rich bunch gone or nearly so double the quantity of ore must be drawn and treated at surface. Seeing they were so tightly hampered before, how can it be accomplished with work giving half the produce? It may be said the bottom level is much improved (how often they do improve against a meeting). Grant this is so—which I do not doubt—can they work it under water? As for cutting under the new shaft with a boring machine at the 70 fm. level to unwater it, from my experience of Captain Abe, this can only be a joke of his. If they cannot command the water now how will they then? In all fairness it is time to understand the whole concern here, and West Basset also. I have noticed on many occasions there is often a great collapse after a testimonial or presentation, and as illustrations I would point to Tincroft and West Chiverton.

CARN BREA.

THE SOUTH DARREN SILVER-LEAD AND COPPER MINE.

SIR,—The report of the directors of this company and the large attendance at the yearly meeting held yesterday show that the public are at last beginning to see the great intrinsic value of the property. In spite of interruptions in working the two deepest levels, the 90 and the 100 fathoms west of Bishop's shaft, for no less a period than three and a half months in this year, 40 tons more lead have been sold this year than last, and about 39¼ tons more copper; and although prices have averaged for lead 1*l.* 6s. 10d. less than last year but for copper 4s. 3d. more per ton, the whole amount of mineral sold has realised 206*l.* 7s. 10d. more than last year. The average monthly sales of lead have been about 40 tons and the quarterly sales of copper about 39 tons throughout the year. The total yearly expenditure has also been decreased by 577*l.* 14s. 10d., even on the most unfavourable estimate when in this is included a sum of 482*l.* 4s. 10d. which has very properly been charged to capital account. The balance in hand has also increased since last year by 214*l.* 19s. 2d. Beside this balance as an asset there is the large profit for October, estimated at 357*l.* The mine is now stated to be made thoroughly safe against even the exceptionally heavy floods of last summer. This will enable the deepest levels to be continuously worked and the sinking below the 110 level to be continued. It is a peculiar feature of this property that both the quantity and quality of the lead improve with depth. In a few months more a question of the greatest importance to the future of the mine will be settled—namely, whether the productive ground west of Bishop's shaft dips eastward and towards the engine-shaft, at the bottom of which there is now a strong lode of both lead and copper. The 110 level is now being driven east to test this. In the 80, 90, and 100 fathom levels the productive ground has been making east towards Bishop's shaft, and there is now at the bottom of that shaft a lode worth for lead and copper about 30*l.* Should this prove to be the case it will open out quite a new mine, which may very largely increase the future profits, as the extent of virgin ground east of Bishop's shaft is some 250 fathoms.

Shareholders ought, I think, now to look closely after the mine costs and see that they are kept as low as is consistent with efficient development. These costs are now heavy, and after deducting capital expenditure amount to about 490*l.* per month for this year, and it should be remembered that during part of that time the mine was only partially worked: 40 tons of lead a month and 40 tons of copper a quarter could now 1 fully believe be raised at a total mine cost, including merchants' bills, of 400*l.* per month, and by a few judicious alterations the mine cost for raising 50 tons of lead per month and 50 tons of copper per quarter might be reduced to 450*l.* a month. Shareholders often forget to give this vital question due weight. Such a reduction would give an extra yearly dividend of 1s. per share. Nothing increases quicker, till it almost swallows up the profits, as would be the case if it were not for the very high price the lead always commands, unless it is constantly looked after; and although the directors have reduced the mine costs considerably, I believe further reductions can be safely made.

This company is now making large and I fully believe it will be found increasing profits, and within the next two months will be in a position to start paying large quarterly dividends.

OLD SHAREHOLDER.

ROYALTY QUESTION—HOME MINES.

SIR,—I learn that many of the mining companies are now collecting valuable information respecting the royalty question, or what is termed I believe in Cornwall and Devonshire the "lords' dues" exactions from mining adventurers. It is intended to invite Members of Parliament to go thoroughly into these important questions (in a like manner to that of the Royal Commission on Agriculture), and imports of foreign ores and metals into this country. Every manager, purser, or other officer of our mines ought to further the interests of this important inquiry as to the amounts paid from the commencement of the various companies in royalties, land damages, fines, &c., the rates of dues now paid to each lord, and what good each lord of the soil has done towards the welfare of any particular mine beyond enforcing full payment of his dues, &c.

Bristol, Nov. 25. SHYLOCK.

THE BWLCH MINES.

SIR,—As a shareholder in the Bwlch Mines I was pleased to read the letter signed "Traveller" in your able Journal, and it is a satisfaction to be so well informed of the progress made by the weekly reports which appear in your columns. The flood tide of prosperity is now beginning to make, and knowing something of the prospects of the above company, coupled with the advancing price of lead, the investing public would do well to turn their attention to this property. The capital is extremely small, the present shareholders having an enormous advantage in heavy outlay made by the former company, and what is of paramount importance in mining, years of time gained. This is a great feature, and is in itself a profit. The mine is under very able management, and I am informed that from the lode recently cut over 100 tons of ore per month have been extracted. The capital subscribed is ample, and it is computed that scores of tons of rich silver-lead ore will be stoped from the 60 fm. level alone, and there are other equally encouraging points in progress at the lower levels, where the great courses of ore in this mine are being rapidly opened out, and which will undoubtedly leave a great and lasting profit to the company. SHAREHOLDER.

BWLCH UNITED MINES.

SIR,—I was pleased to see, in last week's Journal, a letter from "Traveller," drawing attention to this valuable property, and can fully endorse all he says. I have been an investor in lead mines for nearly 20 years, and in that time have visited many properties, and endeavoured to pick up some little knowledge of mines and mining, and I can safely say that in all my experience I have never come across a mine which held out such unmistakeable indications of riches as may be seen at Bwlch United. The discovery in the north lode, which has just been intersected at the 100 fathom level, in Ritchie's engine-shaft, proves the mine in depth, and I shall certainly be prepared for some startling news so soon as they reach a depth of 120 fathoms, or a similar depth to the adjoining mine of Goginan, which at this depth is said to have returned some 60,000*l.* on an outlay of 500*l.* only. It is an important point to bear in mind that in sinking the shaft at Bwlch every level has proved productive, and above the 60 returned 250,000*l.* worth of silver-lead ore, and now in the 60 they are returning good orestuff, and I am informed have put on extra men for stoping. The 70, again, eastward shows a very fine lode, and a very large one, and the 80 is being driven on a lode with every indication of becoming of great value; while at the 100, the most important point of all, where the north lode has been cut it is found composed of crystallised quartz, carbonate of lime, and silver-lead in cubes and other forms. With such a mine, and under such able and experienced management as that of Capt. Bray, the adventurers in this enterprise cannot fail to reap a rich harvest. Financially I understand they are in clover. What with several thousand pounds at their bankers, no liabilities, 5000*l.* reserve, a good directorate, a manager second to none, and, above all, a mine chockfull of mineral, I am under the impression that Bwlch United bids fair to stand unrivalled in the annals of successful mining in Cardiganshire. LYNX.

Norwich, Nov. 27.

Meetings of Public Companies.

COPIAPO MINING COMPANY.

The annual general meeting of shareholders was held at the offices of the company, 2, New Broad-street, on Tuesday,

Mr. J. DUNNINGTON FLETCHER in the chair.

Mr. RALPH S. ARCHBOLD (the secretary) read the notice calling the meeting.

The CHAIRMAN read the report of the directors, which was as follows:—

DIRECTORS' REPORT.

The directors have to present the audited accounts for the year ended June 30, 1879. The summary of the profit and loss account is as follows:—

LOSSES AND EXPENSES.

Dulcinea Mine	£1363	6	0		
Checo Mine	319	9	3		
Checo Silver Mine	343	18	3		
Copiapo expenses	1001	14	9		
Furniture (Copiapo)	123	3	7		
London expenses	538	12	1	= £3690	3 11
PROFITS.					
Al Fin Hallada Mine	£ 64	13	10		
Chacra Farm	317	10	1		
Hacienda Estate	672	17	2		
Interest	55	16	2		
Stores	10	7	10	= 1121	5 1
Balance, being loss for the year				£2568	18 10

Of this sum, however, 986*l.* 6s. 11d. stands in suspense until explanation of certain accounts be received from the manager in Chili. It is believed the loss when these come to hand will be reduced by that sum; the balance at the credit of profit and loss account will then stand at 2459*l.* 1s. 8d., as against 4041*l.* 13s. 7d. on June 30, 1878.

During the year under review the directors have continued to carry out the policy of opening up the mines without encroaching on reserves except to a very limited extent; this is the chief reason of the loss shown on the year's workings.

Since June an important rise has taken place in the value of copper, and the directors have authorised extended operations to be commenced forthwith.

The prospects of the mining properties of the company continue most encouraging. In June last the standing reserves were estimated by the mining captain in charge to be upwards of 3200 tons of 22 per cent. ore, and since then these must have been considerably augmented.

The directors regret to have to report the death by an accident, while in discharge of his duty, of their late mining superintendent in Chili, Capt. Robert Pill. They desire to take this opportunity of bearing testimony to the skill and ability with which he conducted the mining operations generally on the company's property, and to the great loss the company has sustained by his death.

In his place they have engaged and sent out Mr. T. B. Hall, a gentleman who has had considerable experience in Chili, and who has excellent testimonials.

Notwithstanding the great depression in all produce in Chili, the landed portion of the company's property has left a profit of 990*l.* 7s. 3d.

The directors retiring on this occasion are Mr. Arthur Holland and Mr. G. H. Loxdale, both of whom being eligible offer themselves for re-election.

The auditors, Messrs. Cooper Brothers and Co. and Mr. W. F. Moore, also retire, but offer themselves for re-election.

The CHAIRMAN then went on to say that the report contained a *resumé* of the year's operations. The loss shown in the accounts amounted to 2568*l.* 18s. 10d., of which 986*l.* 6s. 11d. was in suspense. When they considered that during the period under review copper had fallen 10*l.* per ton he thought they would not wonder that a certain loss had been occasioned. Again, the company had not been working to get all the stuff they might have done, as the policy of the directors had been to get out only enough to merely pay expenses. The result was that there were now in reserve about 3200 tons of 22 per cent. ore, which was worth a large amount even at the present price of copper. But those who were skilled in the copper market were of opinion that it was still going up, and, therefore, he thought the shareholders would agree with him that the prospects of the company were most favourable. He could not do better than read one or two extracts from letters which had been received from Mr. Powditch, the superintendent. In one letter Mr. Powditch stated—"From the information given in the report of the 14th the present standing ore is estimated at 3250 tons, which were worth about $175,000." Those reserves were in Dulcinea only. He went on to say that the progress at Dulcinea is satisfactory, though by the last advices there had been a falling off, which he believed was only temporary, and there were increased reserves standing. Since the receipt of that letter the reserves had increased. In his letter Mr. Powditch expressed a hope that when the accounts were made up there would be no loss; but on that point, as the report showed, Mr. Powditch was mistaken. The following extract from Captain R. Pill, the then mining superintendent, dated Sept. 14, was given in last year's report:—"The progress made in sinking Fletcher's shaft below the 140 during the past fortnight has been satisfactory. The lode is about 4½ ft. wide, and presents a very promising appearance. The indications for a speedy improvement are very favourable indeed; in fact, I have never on any former occasion been so well pleased with its appearance, and I shall be greatly disappointed if we do not meet with something before we reach the next level." Since then the accounts from Fletcher's shaft had gone on improving, and discoveries had been made which promised to turn out extremely valuable at some future time. There was only one other point which he need refer to, and that was the unfortunate death of their mine captain, Mr. Pill, who was unfortunately killed by the falling of some loose stones in ascending one of the shafts. It was a great loss to the company, and all he could say was that he hoped that in Mr. Hall (who had been appointed in Mr. Pill's place) they had got as good a man. Mr. Hall had sailed from this country, and would arrive at the mine in about three weeks. He might mention that Capt. Vivian had been in charge of the mine since Mr. Pill's death, and writing on Aug. 31 said—"On the whole, I consider the prospect of the mine excellent. I do not like to be sanguine, but my opinion is that the Dulcinea Mine is in its infancy." The directors did not wish to put that in the report, but he thought the shareholders, who had waited so patiently, should know what Capt. Vivian's opinion was. As regarded the accounts they did not require any comment; but the directors had sent over for an explanation of the item in suspense of 986*l.* 6s. 11d.

Mr. HOLLAND, in reply to a question, said that he considered the output of ore after Mr. Hall's arrival would be about 400 tons per month, which would leave a profit of 3*l.* to 4*l.* per month.

On the motion of the CHAIRMAN, seconded by Mr. G. H. LOXDALE, the report and accounts were adopted.

The retiring directors and auditors were re-elected, and a vote of thanks to the Chairman and directors closed the proceedings.

THE NEW QUEBRADA COMPANY.

The ordinary general meeting of shareholders was held at the Cannon-street Hotel, on Thursday,

The Hon. T. C. BRUCE, M.P. (the Chairman) presiding.

Mr. N. G. BURCH (the secretary) read the notice calling the meeting. The following report of the directors was read:—

OUTPUT OF ORE.—The directors informed you by circular, dated Sept. 8, that the output of ore from January to June of the current year amounted to 6197 tons, the quantity sent away by rail during the same period being 5855 tons, averaging approximately 13 per cent. of copper, dry assay. The output has since been further increased by the continuous extension of the workings, as shown by the monthly cards, and the directors anticipate the dispatch of about 7500 tons for the second half of the present year.

WORKINGS ON AROA LODE.—The continuation of the workings has been attended with encouraging results. A new cross-cut has been driven from the northern extremity of the deep level to the eastern wall of the lode, which has opened up ore one-fifth richer in value than that previously stoped from this portion of the mine. The same cross-cut is now being continued westward from the deep level towards the hanging wall, which has not yet been reached, although a distance of 72 ft. has been traversed. It is satisfactory to find that the width of the main body of mineral at this point is already shown to be more than double what it was, where the deep level originally intersected the lode. A winze is being sunk on the eastern wall to ventilate the cross-cut, on completion of which the deep level will be driven northwards on the lode. The stopes off Santa Barbara level, which were opened up some few months ago, have yielded large quantities of ore, averaging 15 per cent. dry assay, and promise to produce copper pyrites of a similar quality for some time to come. The works in the other parts of the mine have proceeded with regularity and without accident. The increasing production of mineral has necessitated the enlargement of the dressing floors, which are now arranged so as to admit of the treatment of abundant supplies of ordinary ore.

TITIARA.—Explorations on a moderate scale have been carried on at this mine, where a fourth level has been discovered. The directors do not anticipate any immediate results, but the appearances are such as to warrant the belief that sooner or later it may prove a material adjunct to the present sources of mineral.

SAN ANTONIO.—There can be little doubt that the true site of this ancient and highly reputed lode or deposit has been discovered. The operations have as yet been almost entirely confined to clearing out the old level, which was broken into, and which is found to communicate with rather extensive workings. Ore bearing ground has also been found, and profitable stoping has been commenced, but the workings are so much choked with debris and mud that no definite opinion can yet be formed as to the value or extent of the discovery.

UTILISATION OF LOW GRADE ORES.—In addition to the present output of payable ore, the mines are capable of furnishing larger quantities of a lower percentage—say, from 7 to 8, dry assay. The utilisation of this mineral has for a long time been engaging the serious attention of the directors, and after a thorough examination of the various means proposed, they have at length decided to make a trial of smelting on a moderate scale for the reduction of these ores to a rough regulus sufficiently rich to pay for shipment. A very convenient spot has been selected upon which to commence operations, where there is ample water power obtainable from the river for driving the necessary blast apparatus at a comparatively small cost. The outlay for plant will be relatively small, and from careful estimates which have been made the directors have every reason to anticipate favourable results. The necessary men and materials will leave for the mines at an early date.

CONTRACT WITH THE BOLIVAR RAILWAY COMPANY.—The contract between this company and the Bolivar Railway Company for the current year has worked satisfactorily, and the traffic has been conducted with regularity and efficiency. Ten Revenue account necessarily shows a deficiency for the first six months, the whole net proceeds of ore being credited to the railway company towards the guaranteed minimum. After the month of September, about which time this payment will have been completed, the net proceeds of the ore, less only the reduced traffic rate of 30s. per ton, will be retained by this company. The contract has been renewed for another year on substantially the same terms, but with the addition of needful provisions incidental to the carriage of smelting materials, fuel, &c., and of regulus.

GENERAL REMARKS.—The works generally are being prosecuted with vigour, and it appears that the output of ore for direct export can be fully maintained without making any reduction for the regulus which will be made on the spot. The operations are conducted with a view to the maintenance of adequate reserves. The timber and dye woods on the estate are likely to aid the revenue accounts of ensuing years. Some small shipments have resulted profitably, and this business is being extended. The health of the staff generally has been good, and the services of the superintendent and officers all that could be desired.

The CHAIRMAN said: Gentlemen, it now becomes my duty to move the adoption of the report and accounts, which have been submitted to you. In doing so I do not intend to detain you very long; because, according to the practice which we have always adopted, we have endeavoured to put very fully in the report all the details of the operations which we have to explain to you, believing that to be a much more satisfactory way than in trusting them to verbal explanations, which would be difficult to understand in dealing with figures and details. Accordingly I do not mean to trouble you with very many remarks in explanation of, or supplement to, what appears in the report; but, in a general way, I will give you the result as it appears to us of the situation at which we have arrived. We have during the time since we last had the honour of meeting you pursued steadily the policy which we then indicated, and which then met your approval. We have urged our officers at the mines to continue steadily the work of exploration, so as to see correctly (by proving it) what the actual value of our property is, and, at the same time, to provide supplies of ore for export as rapidly as the development of the works would admit. We have steadily pursued this line; and I need only repeat what I have had the pleasure of saying to you during the last one or two meetings when I have had the honour of being in this chair—that we have every reason to be satisfied with the conduct of our manager and his staff, and to believe that our interests are in able and energetic hands. It is no more than just to Mr. Holman, our mining superintendent, that I should make this statement, which I am sure everyone acquainted with the management of the company will endorse. (Cheers.) The supply of ore during this year has been fully kept up to what Mr. Holman said it would be, both in quantity and quality—in fact, the quality has rather improved than otherwise. It is stated, as you will see in the report, that during the half-year from January to June the output amounted to 6197 tons, the amount sent away being 5800 tons, averaging approximately 13 per cent. of copper dry. During the second half of the year there has been a continuous extension of the workings. The report states that we expect the dispatch of 7500 tons in the second half of the year. Since then Mr. Holman has applied for an additional ship, so we may take the dispatch at about 8000 tons for the second half of the year, which is a satisfactory progress, and which I hope will continue. In addition to that we have pursued different works, which it is difficult to explain technically in detail, with the view of proving the extent of ore; and there is a circumstance mentioned here which is extremely important, and that is that in the deep level north we have made one or two cross-cuts, to determine the breadth of the lode, and at the last cross-cut the ore is wider and better. The ore in the deep adit is not so rich as at Santa Barbara. The cross-cut is continued from the deep adit towards the western wall, which has not been reached, but it has traversed a distance of 72 feet; so the width would appear to have increased very largely, and is widening out as we go to the north at that depth, which is a satisfactory feature, as it shows that the lode instead of tapering away is becoming wider as you go north. The upper levels have been pushed forward 90 fms. beyond the point at which the deep level has arrived, and the lode is there found well indicated, and so we have every reason to believe that we shall also find it in the deep level when we get under the same point. There are indications of other veins coming in as we go north; the level is as yet near the top of the lode, and, therefore, the veins are not so continuous as when you get more into the mass, but the value of this discovery is that it seems to indicate a continuation of the vein to the north. Possibly, although we cannot affirm it, we may find there is a continuation of the veins all the way to Titiara, which is a mile or so to the north. Of course, we do not say that is the case, but from everything we see it seems to tend towards it, and I need not tell you that if that be the case it will show it is a wonderfully valuable property indeed. I may add that the ore which we have proved now in the ground which has been explored, according to Mr. Holman, is about 100,000 tons of reserve, and it shows that the estimate which was given by Mr. Darlington in his report not only was not exaggerated but in reality was a very moderate and modest estimate of what the capabilities of the mine are. I say this to the credit of Mr. Darlington, for gentlemen in his position often find it more agreeable to take sanguine estimates than modest ones, but certainly it

has been proved, as far as his estimate of the quantity of ore in the mine is concerned, that the results of the opening it out are more favourable—considerably more favourable—than he estimated them to be. (Cheers.) In the Santa Barbara, in which the stopes were opened by Mr. Holman in yellow ore, I stated at the time we presented our last report it was one of the most favourable stopes he had ever seen, and it has continued to be so; it gives yellow ore of a high quality, in a place which is very favourable for working. Large supplies are now being taken from it, and there is no evidence that it will not continue over a considerable time. In the Titiara Mine, which is situated to the north, we are continuing explorations, but not very hurriedly. In this mine a new level has been discovered, and there is evidently a considerable deposit of mineral. But that mine is situated some distance off, and the communications with it are very difficult; although we keep it opened up it would be hardly worth while to go to the expense of making the necessary communication. But there it is; the ore is there, and we hope before long to be able to bring it into working. (Hear, hear.) There is another mine which I mentioned to you at the time of the last meeting—at that time it had been just discovered—which was in the opposite direction, called the San Antonio Mine. It was found about six months ago. Since I last had the honour of addressing you explorations have been carried on at the mine, and small quantities of ore had been taken out, but the old workings were found to be much crushed, and full of mud and other obstacles, and we are proceeding to prove another level at a lower depth, with the view of opening out the lode; and we shall see what there is to be found in it. It had a great reputation in former days, and no doubt we shall find ore, but we shall not know its extent until we open it out by means of a new level. That is as far as I need add anything to the report with regard to the progress of the works, which has been satisfactory; they have been well managed, and they are being carried on very steadily and very intelligently. As we state in the report, we are now proceeding to take steps to utilise the poorer ore by smelting. We have made arrangements for that, and we have got a place for the furnaces, and we have got water-power which will enable us to carry out all our operations there, whatever process it may be found desirable to adopt. We have sent new men out to take charge of that, and they left from here a short time ago, and we shall send out the necessary materials, and we hope and certainly believe that very much within the next year we shall get this into full working order. Now, Mr. Holman reports that there is a large quantity of ore suitable for this treatment; in fact, he says it is a more suitable process for the ore which we have than almost any other; and we shall not only be able to treat these ores, and obtain, as we have reason to hope, a considerable addition to our revenue, but it will also have the effect of utilising the poorer ores, and thus avoid the necessity of sending home any which may possibly not be rich enough to pay for the carriage. We think the effect will be to increase the quantity we send, and at the same time improve the quality of the ore we send home in a raw state. Of course our prospects, as far as the works go as we say here, are certainly favourable, and they are gradually improving, as they have been for some time, and nothing has occurred in the least to diminish the favourable anticipations we have formed. (Cheers.) The actual amount of profit which we are able to realise out of all this depends upon a factor over which we have no control, and that is the price of copper. Well, you all know the price of copper has latterly shown a considerable improvement, and if that improvement continues (and one would almost hope and believe it will, but it is impossible to say), the paying value of the mine would increase very rapidly. I was making up—it is merely a fanciful calculation—the other day that if we had had the price for copper at the beginning of the year which rules now we should have had an increased return upon an average of something like 1500*l.* per month; so that if the price of copper continues upon a high level, as we have every reason to hope it will, it will very soon put a different complexion upon our affairs to what they had some time ago, a complexion which, I am glad to say, they seem a little tending to take now. (Cheers.) Of course it is a question which everyone here is as good a judge of as we are, as to how far the improvement is a real and substantial one. I hope and believe it is; and if so our prospects are extremely favourable. (Cheers.) I can only say that during this long period of extreme depression this property has not deteriorated but increased in value. It is quite true, gentlemen, that you have had the painful experience of not receiving returns which at one time you thought you ought to receive, but that we cannot prevent; at all events the property has actually improved during all this time of depression, and if there is a revival, which there is every reason to expect, we are in a position to thoroughly profit by it. Our works are in a position which gives a prospect of further progress and development as we go on; and if, as I say, the market gives us a fair and reasonable price for our mineral we can have no fear whatever as to the prosperity of the company. (Cheers.) That is all I have to say. I do not want to make any sanguine estimate. I have given you facts, and you are as good judges as I am. I beg to move the adoption of the report and accounts.

Mr. T. W. Meates, Deputy-Chairman, seconded the resolution.

Mr. Balfour: Mr. Chairman, I came into the room to-day for the first time at a meeting of this company in order to ask a question, which you have in fact answered, and that was to ask the board whether we might indulge the hope that with the increasingly favourable operations of the company, and also looking at the increase in the price of copper, whether we might indulge the hope that we should have a dividend next year? But I do not even ask you now to answer that question. The account we have had from you has been so full, so lucid, and yet so temperate, that I think every shareholder will go home with a much more comfortable impression than when he entered the room. (Hear, hear.) For my own part, I confess that although I at one time thought my money was all lost pretty well, yet I stuck to my shares. I looked to the list of directors, and I there saw enough to convince me that it was a thoroughly *bona fide* concern, and I now believe that in the course of two or three years we may perhaps have a handsome dividend. (Cheers.)

A Shareholder asked whether the new Holway process would be brought into operation?——The Chairman said it would depend upon the result of certain experiments which were now going on. The directors did not want to enter into the expense of experiments themselves, but they were carefully watching experiments which were being made elsewhere, and would avail themselves of anything which seemed to them advantageous in the process. He might add that the directors had given orders for 100 tons of the poor ores to be brought home, with the view of making experiments, so as to have the advantage of knowing how to treat those ores by the new processes now occupying so much attention.

Mr. Ward said no doubt there were other processes which probably might prove of great value to this company. He should like to know whether the question of the royalty had yet been settled, as that was a matter which was of material importance to this company. He noticed that the arrangement with the Bolivar Railway had been continued for another year; he, therefore, presumed that the arrangement was a satisfactory one, and was going on all right. In his speech the Chairman travelled so tenderly over the ground that it was to be feared that he did not inspire the shareholders with the confidence which he himself felt. He did not see why the directors should not have given a calculation, based upon the report, of what the results would be for the present year. The second paragraph of the report stated that the output from January to June of the current year amounted to 6197 tons, and the output had since been further increased, and the directors anticipated the dispatch of about 7500 tons for the second half of the present year. Now, that was a calculation which could very easily be worked out, and no doubt the Chairman was familiar with what it meant, and it would be pleasing to know approximately what amount of margin would be left to the shareholders, so that the shareholders might form an opinion what dividend might be expected at the end of the year. He had heard floating rumours that a dividend might be expected even at the end of this year.

Mr. Bolton said he had made a calculation from the figures contained in the table published in the *Mining Journal* on Aug. 30 last, and it seemed they had sold 26,000*l.* worth of copper in the three months, as against 32,200*l.* for the six months, which showed a marvellous development in the operations of the company for that short period.

Mr. Bird said he could bear testimony to the excellent working of the mine in Venezuela. When he was there in August last he paid three separate visits to the mine, and he found that under Mr. Holman's management the mine looked vastly different, and greatly improved since his visit two years previously. The crusher which had recently been sent out was working remarkably well, and doing most valuable service. As regarded the smelting of the low-grade ore, he thought it would be a most important thing to do for more reasons than one, not only for the commercial results which would be obtained, but from the fact that at the present time that ore occupied some valuable land which could be made serviceable in extending the dressing-floors, which as the operations of the company extended would be of the greatest value to the company. On one visit he rode up to the mine, and on the other he went on the engine, and found that the line from Tucacas to the mouth of the mine was working satisfactorily. Mr. Holman, Mr. Francis, Mr. James, and the staff generally all seemed thoroughly up to their work, and the Cornishmen who had been sent out were in excellent health, were working well, and were highly satisfied with the position they held. It was gratifying to him, after the lapse of two years, to see the vast improvements which had taken place.

The Chairman: Gentlemen, I am very much gratified indeed, and I am sure you must all be, to hear the statement which Mr. Bird has just made. It is a great thing to get an independent opinion regarding the works, which we can only know of, to a certain extent, by report, and it confirms all we have heard as to the management of the mine. With regard to the observations which have been made, I am sorry Mr. Ward should think me too tender. My great object in these things is not to be too sanguine, because that is sometimes a temptation to gentlemen who sit on this side of the table, but I have always endeavoured to tone down my own anticipations in explaining them to the shareholders. I have endeavoured very strongly to take this line, so that if I make any error it may be in the direction of under-rating rather than over-estimating. I hope you will understand as long as I hold this position that is the line I shall take. I will not tell you anything regarding which I have not the strongest possible belief. I have put before you the state of the works. You know the state of trade as well as I do, and you can form your own opinion and conclusion. Probably the conclusion would be more favourable than I should like to say from this chair. We know that there is a certain quantity of ore coming over, but we do not know the price at which it will sell, but if the present price continues we should have a surplus of 8000*l.* or 10,000*l.* But we have a certain floating debt to get rid of, and if we could consolidate our floating debt, which I hope we shall have it in our power do when things are better, we should start fair, and have a prospect of fair returns. As to the royalties, we have had a good deal of negociations about them, and we have the strongest assurance that the proposal we made would be carried out. There has been some delay, and the matter is not yet wholly completed, as one of the parties is a ward in Chancery, and you all know the delay which occurs in connection with Chancery proceedings. But we have the assurance that the arrangement proposed will be carried out. In corroboration of what Mr. Bird has said about the inferior ores, I may mention that we have recently received a letter from Mr. Holman, in which he says he thinks the inferior ore is extremely well suited for treatment, adding—"The ore is abundant, and we shall require additional furnaces, even to what we have already ordered." Mr. Holman also said the inferior ores open out a very considerable prospect of profit, and therefore we are determined to carry it out as rapidly as we can. A gentleman spoke about the great increase of the returns latterly. It is true there has been a large return, but you must remember that the number of the returns of sales annually do not correspond with the returns of the output of the mine, because there are two or three months between the time the ore leaves the mine and when it arrives here, and there may be inequalities in the time the ships arrive, but there is no doubt the output has been very considerably increased, and Mr. Boulton's estimate is not exaggerated.

The resolution for the adoption of the report and accounts was then put and carried.

The Chairman proposed the re-election of Mr. F. H. Hemming as a director.

Mr. Ward seconded the resolution, which was put and carried.

The Chairman proposed the re-election of Mr. James Thompson as a director.

Mr. Ward: I have pleasure in seconding that, and I avail myself of the opportunity of saying that both the gentlemen just named have rendered valuable services in the past, and I confidently second their re-election.

The Chairman: I fully agree with you.——The resolution was put and carried.

Mr. Ward proposed the re-election of Mr. George T. Rait, one of the auditors.

Mr. Cowper: I will second that. This is the first time I have attended a meeting of the New Quebrada, and I go out of the room very much satisfied, although I came here with doubts to the contrary. I wish all meetings went off as well and pleasantly.

The resolution was then put and carried.

Mr. Bolton proposed a cordial vote of thanks to the Chairman for his able and lucid explanation, and also to the directors for their able management of the company's affairs.——Mr. Lewin: I second that. I have attended meetings of the company for 17 years, but this is the most satisfactory I have attended.

The resolution was put and carried, and, the Chairman having acknowledged the compliment, the meeting broke up.

DEVON GREAT CONSOLS COMPANY.

The half-yearly ordinary general meeting of shareholders was held at the offices of the company, Gresham House, on Wednesday,

Mr. Peter Watson, chairman and managing director, presiding.

Mr. W. H. Allen (the secretary) read the notice calling the meeting. The report of the directors was as follows:—

The board of directors have to report that the receipts for the six months' sales of copper ores, amounting to 4989 tons 3 cwts. 3 qrs., realised but 10,521*l.* 19s. 6d., or an average of only 2*l.* 2s. per ton, the highest price obtained in the half-year which this account embraces being on June 19, 2*l.* 5s. 7d. per ton (8s. 8d. per unit), and the lowest on Aug. 21, 1*l.* 17s. 7d. per ton (or 7s. 6d. per unit). The lowest price for copper (metal) ever known was in the month of August, when Chili bars were quoted at 53*l.* to 53*l.* 10s. per ton. The amount received for arsenic in the six months has been 6600*l.* 9s.

The expenditure side of the account includes payments for several months' stock of coal, iron, steel, &c., obtained at favourable prices previous to the recent advance in these several articles. The sum of 130*l.* has also been charged and paid on account of rock-boring machinery, and other amounts in improvements made on the surface at the dressing floors and arsenic reduction works. It may be well to remind the members of the company that this is not an annual but the usual half-yearly receipts and expenditure account (or cash account), as appears by the books of the company on Oct. 31, and which show a credit balance of 2880*l.* 0s. 2d., as against a balance of 1661*l.* 2s. 6d. at the corresponding period 12 months ago. In thus drawing the attention of the members to the accounts, it will also be observed that the receipts embrace a period of six months against seven months' expenditure. Owing to the 13 (four weeks) monthly pay days the extra month comes into this account, being due and paid on the day previous to closing the books on Oct. 31.

His Grace the Duke of Bedford was some time ago solicited at the shareholders' request to make some concessions as regards a reduction of royalty, like most of the lords of all the leading Cornish mines and in various other parts of the country, likewise to assist by an allowance for the erection of rock-boring machinery, and it will be remembered at the last meeting of shareholders a hope was expressed that (owing to the continued great depression in copper, the vigorous prosecution being carried on in the development of the mines, and the enormous amount already paid in royalty to the dukedom for the last 35 years, amounting to about 322,230*l.*) by a further representation, it was hoped he would have consented to a liberal reduction in the present very high rate of royalty as a home copper mine. A memorial was accordingly sent direct to His Grace in July last, and it was not until Oct. 23 a reply was received declining to give any assistance. This correspondence (the memorial and the reply thereto) may be seen at the company's office by any shareholder. Seeing the manner in which other landowners have met the request for an abatement from their mineral tenants, the shareholders will share with the directors a feeling of great disappointment that His Grace has not seen fit to accede to the request contained in the memorial, which the circumstances of the case seem so fully to justify. Notwithstanding this refusal of assistance in the royalty and for rock-boring machinery, the board of directors determined to lose no time in entering into contracts for the supply of rock-boring drills, which will be for the mutual benefit of the company and His Grace in opening out more expeditiously reserves of ore ground, which it is still hoped may influence His Grace to a reconsideration of the matter of an allowance. At the last half-yearly meeting it was stated negociations were pending regarding a sale of Abbotsfield, formerly in the occupation of the resident director. The directors have since then sold the lease for 3000*l.*, which, however, is not credited in the account, it not having been yet received owing to the purchaser's solicitor requiring some particulars regarding the trustees of His Grace he late Duke of Bedford, from whom the lease was granted to this company

The board of directors have great satisfaction in being able to state to the members that, in accordance with the wishes of the shareholders expressed at the last meeting, their Chairman, Mr. Peter Watson, has consented to become the managing director of the company, and accordingly he has been appointed to that office. It is also the pleasing duty of the board to announce the appointment of Mr. Moses Bawden as purser, who is thoroughly acquainted with the duties of this office, and will reside at Tamar View, the property of the company, on the mines. Mr. W. H. Allen (who was appointed secretary *pro tem.* on the death of the late secretary) has been appointed secretary of the company,

The agent's (Capt. J. Richards) report is herewith annexed, showing the quantity of copper ores and mundic in reserve:—

Copper ores.....	Tons 27,299	Arsenical mundic ...	Tons 22,000

Which shows an increase on the quantity in reserve 12 months ago, when there was

Copper ores.....	Tons 26,465	Arsenical mundic ...	Tons 21,000

A careful perusal by the shareholders of this report will clearly show the vigorous prosecution these mines are now receiving by an increased number of hands, with a view to making important discoveries of ore ground. The attention of shareholders likewise is specially directed to operations being resumed in the southern portions of the mine, which is in future to be known as "Watson's." Many years ago this part of the mines produced large quantities of copper ores and mundic, but at that time mundic was of little value, and as other portions of these extensive run of mines were so much richer and more profitable, this southern portion was suspended. Seeing the great quantities of ores the new south lode has since then produced, and still continues to do, it is anticipated that Watson's portion of the property may on being vigorously developed turn out equally as productive. In the *resumé* of Capt. Richard's report he states that he has "the satisfaction of observing that our present and future prospects are most encouraging."

With a continued rise in the price of copper and arsenic, which the directors trust and believe will be the case, especially early next year, they hope to be enabled to provide for the large outlay necessary for the purchase of rock-boring machinery and various other materials in connection therewith, and to resume the payment of dividends.

The Chairman said he was glad to be able to stand before them on the present occasion. He had been confined to his bed since Friday, from cold supervening on a severe chill, and he was only able to get up yesterday. He would dilate a little upon what had taken place during the past half-year; but he had not a great deal to say on the present occasion, as this was not an annual but a bi-annual meeting, and the accounts were confined to a statement of receipts and expenditure. He deeply regretted that the half-year had not been more fortunate. During the last 12 or 13 years the course of the copper market had been downwards, until in August last they arrived at what might be termed the lowest price—53*l.* for Chili bars. The six months' sales of copper ores amounted to 4989 tons, and realised 10,521*l.*, or an average of only 2*l.* 2s. per ton. The highest price obtained in the half-year was on June 19, being 2*l.* 5s. 7d., or 8s. 8d. per unit; and the lowest on Aug. 21, 1*l.* 17s. 7d. per ton, or 7s. 6d. per unit. They had received for arsenic 6600*l.* in the six months. He next turned to the expenditue side of the account. In that account, he must tell them, the directors had charged a large sum for iron, for steel, for coal, and various other things. Some three or four months ago the board took into consideration the desirability of laying in not only a good stock of coals for the winter, but also a good stock of various other commodities, inasmuch as they could pretty plainly see that a rise was about to take place in those various articles. All these amounts had been properly charged in the accounts and paid. (Hear, hear.) If the directors had to purchase these things now they would have to pay much more for them. Had it not been for this the accounts would have shown so much the better. They had also charged in the accounts and paid certain amounts in connection with the reservoir, 190*l.* in connection with the rock-boring machinery, and improving the dressing and floors of the arsenic reduction works. It would be seen by the report that the credit balance was 2880*l.*, as against a balance of 1661*l.* at the corresponding period twelve months ago; this was after paying everything up to Oct. 31. And he must draw their attention to the fact that whilst there were in these accounts six months' receipts for minerals the expenditure embraced seven months; the cost for the seventh month coming in just before the closing of the accounts, otherwise the accounts would have been so much the better by the amount of that one month's cost. The next paragraph referred to the important question of a reduction of the royalty. A long memorial was prepared by the directors, and sent to His Grace the Duke of Bedford, asking him to consider the desirability of giving the company assistance by the reduction of royalty, as had been done in nearly every other mine in Cornwall and Devon, and he was going to say in almost every mineral district in the kingdom. (Hear, hear.) That memorial, and the reply to it, were in the office, and could be seen and read by any shareholder. The memorial was sent to His Grace in July last, but the reply was not received till Oct. 23, when the price of copper had risen. Whether that fact in any way influenced the decision of His Grace it was not for him to say; but certain it was that the directors, seeing that the shareholders of this company had paid to the Dukedom of Bedford no less than 322,230*l.* in 35 years, and seeing that Chili bars were down as low as 53*l.* at the time the memorial was sent in. Looking at these facts the directors did hope and believe (and he expressed that hope and belief at the last meeting) that His Grace would take into consideration the desirability of lessening the dues, and thus give the company some assistance in erecting boring machinery. But His Grace had declined to do so, and the directors regretted it exceedingly. Because this was not the only mine whose shares, with 1*l.* paid, had been as high as 60*l.* or 70*l.* per share.

A Shareholder: What is the amount of royalty we pay?

The Chairman: One-eighteenth. In the South Caradon the royalty had once been at 1-18th or 1-20th, and the 25s. shares were to-day marketable at about 6*l.* per share. They were raising the next largest amount of copper to the Devon Great Consols, and realising as much money, but in the South Caradon the lords had reduced the dues from 1-18th to 1-30th. (Hear, hear.) The directors did not ask a very great deal of the duke, but they certainly did hope he would have made some remission. His Grace, much to his credit, had remitted a considerable percentage of the rents of his agricultural tenants.

A Shareholder: As much as 50 per cent.

The Chairman: Well, the directors of this company did not ask for a remission of 50 per cent. But the directors considered that the shareholders, if not agricultural tenants were, at any rate, mineral tenants, and seeing that at the time the memorial was sent in Chili bars were at 53*l.*, which was the lowest price that copper had been at for 100 or 150 years, the board did hope that His Grace would have come forward in a liberal spirit and assisted the company. The directors hoped that he would still do so. (Hear, hear.) Notwithstanding this refusal the directors lost no time in looking out for rock-boring machinery.

A Shareholder: Excuse me for interrupting, but was the royalty always one-eighteenth?

The Chairman: At one time it was 1-12th. The directors accordingly ordered a compressor, which was now being erected, and tubing was being put in, and at the present time the rock-borers were in a position to go to work. This would greatly facilitate and expedite the operation of opening up the ore grouud and driving. It was estimated that the work would be done about three times quicker; that was to say, that the boring machinery would drive in one month as much as it would take three months to drive by hand labour. This would be to the benefit of the company, to the benefit of the Duke, and also to the benefit of those employed in the district, because if they opened up the mine more quickly there was more ground to stope, and more hands could be employed. The machinery would have been erected long ago, but the directors hoped His Grace would have come forward and assisted. The shareholders would remember that at the last half-yearly meeting it was agreed to dispense with the services of the resident director, and to sell Abbotsfield, which was formerly in the occupation of that gentleman. The property stood in the company's books at 2600*l.*, and he was pleased to inform the meeting that it had been sold for 3000*l.*, and he expected to receive 1000*l.* on account to-morrow, and he hoped the balance would be paid within a very short time afterwards, which would bring 3000*l.* into the coffers of the company. The report went on to say—"The board of directors have great satisfaction in being able to state to members that, in accordance with the wishes of the shareholders expressed at their last meeting, their chairman, Mr. Peter Watson, has consented to become the managing director of the company, and accordingly he has been appointed to that office." (Cheers.) He did not wish to say much upon that subject. It was the wish of the shareholders at the last meeting that he should take the office of managing director. He had a great deal to attend to, but it was only just to himself to say that he had made the interests of the Devon Great Consols Mining Company first and foremost. (Hear, hear.) It had been a very great, a very arduous, and a very serious strain upon his health and constitution—he would not say his temper. He had worked manfully for the interests of the shareholders; he said he would do so at the time he accepted the office of managing director, and he hoped he had done it to the satisfaction of the shareholders. (Cheers.) He might mention that he became managing director not only as the largest shareholder but also as having several friends who were also largely interested, and the shareholders generally might rest assured that he would do his best, and they would have no reason to regret his appointment to the office. (Cheers.) The report went on to say—"It is also the pleasing duty of the board to announce the appointment of Mr. Moses Bawden as purser, who is thoroughly acquainted with the duties of his office, and will reside at Tamar View, the property of the company."

A Shareholder: Is that on the mines?——The Chairman: Yes. It was not Abbotsfield, which was a mansion, but Tamar View was a comfortable residence. The directors had thought it desirable to have the purser on the mine. He might mention that he and Mr. Bawden had known each other if not from boyhood, at any rate they had been associated together from a very early period of life. Mr. Bawden received his earliest appointments from Mr. Stainsby, his (Mr. Watson's) uncle, the announcement of whose death many of the shareholders had, no doubt, seen in last week's Journal. He believed that appointment was given to Mr. Bawden in 1844, so he had had a very long experience in mining companies; and he could only state that a gentleman with whom he was speaking the other day (who was a great authority on mining) said—"I think he is the best man in Cornwall but myself." (Laughter, and cheers.) He believed the officers and the workmen, and, in fact, everyone connected with the mine would have no reason to regret the appointment. (Hear, hear.) The office was an important one, as the Devon Great Consols was the largest undertaking of the kind in the kingdom. As secretary the board had appointed Mr. W. H. Allen, who had been many years in the office. The report then went on to state that the reserves of copper ore and mundic were greater than they were twelve months ago. The report next referred to a very important part of the property—the southern portion of the mines. The shareholders would have noticed from time to time the enormous amounts of copper ores which had been got and were still got, from the south lodes. He had by him the reports of the com pany from the commencement of the undertaking, and from time to time he had devoted an hour or two in the evenings, sometimes up till midnight, in looking through those reports; and he felt that something more should be done than was being done towards the development of that portion of the mine. From those he gathered that it would be a good speculation to still further develope the southern portion. He should mention that this was the part which was worked in 1855 and 1856, when the company was very prosperous indeed. This portion and other portions were afterwards stopped; but it would be a good thing if they had gone on with them, for they were yielding good dividends, and money would have been better spent in still further laying open that portion of the mine. It might be that the history of the mine would repeat itself, and that they might have something good there (Cheers). They used to get there something like 55 tons per month of 4 or 5 per cent. ore, which had a large amount of mundic. The lode opened 4 or 5 ft. wide, and contained mundic, which would now pay to make arsenic of. In 1858, at the 40 fm. level, or what was really the adit level, a pair of tributers got about 30 tons of ore, making the high produce of 11 or 12 per cent. That would bring it to about 7*l.* or 8*l.* per ton. They were now clearing the adit level, and as soon as that was done they would begin to clear out the shaft below. From what could be ascertained the shaft ran down to two levels below the adit level, and was there sunk about 12 fathoms lower, but nothing had yet been done there. When the adit level was cleared they would soon get the water out, and the mine would be developed there, and the directors intended to have a compressor, rock-drills, and tributers, and try their luck at resuscitating something which was generally thought, not only by the company's agents, but by men of experience generally in the district, as holding out good hopes for the future in connection with this portion of the mine. He trusted the shareholders would approve of what the directors were doing. (Cheers.)

A Shareholder said he should like to see tributers at work at other parts of the mine, and hoped this would at once be done.

The Chairman replied that they had commenced setting tribute pitches in the old portion of the mine, and more would be set by-and-bye. There would be no consumption of coal in pumping out the water, as all that was required to be done was to yoke the rod (which was already up) to Richards' powerful pumping-wheel, which would pump out the water. There was sufficient pitwork in hand. There were other portions of the mine which the directors must turn their attention to—the north lodes, which had been favourably reported upon by the late manager—Capt. Richards. There were also other lodes to which attention must be turned. Therefore he said again, seeing what they were still doing, and seeing what they intended to do, he did hope the Duke of Bedford would see that they were tenants, and, like the agricultural tenants, ought to receive some remission of the amount they paid to His Grace. (Cheers.) So much for the past. It had been one source of regret, from the time he came into the direction, that the price of copper ore had been so low, but he hoped that from the present time regret on that score would to a certain extent vanish, and that they would have the satisfaction of seeing an improved state of affairs. Already, as he predicted a long time ago, things were looking better. Better times had come, but the effect of these better times did not show in the present accounts, because it happened that three of the worst sales—at 8s. 6d. per unit—were included in the accounts. But he might mention that the last two sales—the one last week and the one the month previous—realised more money, and which were not included in the accounts. To put it more clearly, the three sales realised 8s. 6d. per unit, and the last two sales 10s. 4d. per unit. In the concluding paragraph of their report the directors stated that "they hope to be enabled to provide for the large outlay necessary for the purchase of the rock-boring machinery and various other materials in connection therewith, and to resume the payment of dividends." He might mention that at the last setting the directors had given an increased price per fathom to about 100 miners, and had also given previously an increased price per fathom to other men for breaking ground. In some other cases the board had under consideration to follow a similar course, and had given instructions to the purser to act in concert with the manager and other agents in carrying it out. It was of much greater importance that this rock-boring machinery should be erected and paid for, and the mine properly and promptly developed, than that they should receive two or three dividends.

A Shareholder asked what was the average standard rate of miners' wages for eight hours' work a day?——The Chairman: 14s., and they will have something more now.

A Shareholder: On what grounds has the advance been made?——The Chairman: On the increased price of copper, and the increased price of food. His object and the directors was to pay the men better when they were able to do so. He thought the shareholders would agree with him that it was better to open up the mine thoroughly, and for a permanency (even if they gave up for the present two or three dividends), rather than go on in the old jog-trot way they had been doing for many years. (Cheers.) This was the bold course which the directors had taken, and it would be carried out manfully, and he hoped with the cordial support of the shareholders. (Hear, hear.) In addition to paying for the boring machinery, the directors hoped in the early part of the year to take into consideration the propriety of resuming dividends. (Hear, hear.)

A Shareholder: Have you in hand a long contract for arsenic? A high authority recently said in the City that chemicals were going up. (A laugh.)——The Chairman said that although "an independent member"—(laughter)—himself he must say that Lord Beaconsfield was perfectly right in what he said with respect to chemicals. There had been a largely increased demand for chemicals. At one time they could not have sold arsenic at anything like approaching the price it was now. There was now a large demand for arsenic, and there would be a larger demand next year, and he hoped the company would get a better price for it. The company were the largest producers in the world. The present contract extended to the end of the present year. He went on to express the deep regret with which he had heard of the death of Mr. Heading, of Tavistock, who was a large shareholder in the company, and who often attended these meetings, and criticised the management. Mr. Heading was a generous hearted man, and he as Chairman, and he was sure the shareholders also, would hear of his death with deep regret. (Hear, hear.) In conclusion, the Chairman moved the adoption of the report and accounts.——Lord Claud Hamilton (a director) seconded the resolution.

The Chairman, in reply to an observation from a shareholder, said he believed that in twelve months from the present time they would see copper 20*l.* per ton higher than now. (Hear, hear.)

A Shareholder: There is one word upon page 8 which I should have liked to have seen stronger. The directors say they "hope" to resume dividends. Cannot that word be made stronger?

The Chairman: I will put a double "hope" to it. (A laugh.)

The Shareholder: Pope says "Hope springs eternal in the human breast."

Lord Claud Hamilton: And the next line runs—"Man never is but always to be blessed." (A laugh.)

The resolution was then put and carried.

Mr. Taylor, Mr. Roberts, and several other speakers, expressed an opinion that some further attempt should be made to obtain a remission of the royalty from the Duke of Bedford, and after some discussion, and with the concurrence of the Chairman, a resolution was passed to the effect that the shareholders present deeply regretted that His Grace the Duke of Bedford had not seen fit to reduce the royalty, or allow anything for boring machinery, and considering the vigorous development which is going on at the mine, hopes His Grace will see fit to reconsider his decision and grant a reduction. The resolution was moved by Mr. Taylor, and seconded by Mr. Roberts, and carried unanimously.

The Chairman said it was satisfactory to know that there had been an increase of nearly 50 per cent. in the number of shareholders in the district.

A Shareholder: That shows the confidence which is felt in the management. (Hear, hear.)

Mr. Taylor: It is not surprising when we see the vigorous way in which the mine is being prosecuted.

Mr. DAWE (of Tavistock) said he had confidence in the management, and believed the southern portion of the mine would be most successful.

Mr. H. C. STEWART (one of the auditors) said he had gone carefully through the accounts, and was perfectly satisfied they were now working in the right direction. They had a very able body of directors, and a managing director second to none, and he believed if they kept perfectly quiet and went on as they were now doing they would get out of rough water.

The CHAIRMAN said that perhaps the shareholders would like to hear a few words from Mr. Bawden, the purser.

Mr. M. BAWDEN said he had really very little to add to the able and exhaustive statement of the Chairman. During the last few months they had heard nothing of strikes at the mine. The men were thoroughly satisfied, and reposed every trust in the board and the managing director, and were satisfied that the company would give them more wages as soon as they could afford it, as it was the wish to give a fair day's wages for a fair day's work. Since his appointment he had endorsed the Chairman's recommendation as to boring machinery, which would give an increased output and an increase of money for thecompany. They were laying open the ground as quickly as possible, and would be able to fulfil every promise which had been made, and he hoped a little more.

In reply to a shareholder, Mr. BAWDEN said that when they got deeper they might possibly get tin, but they must work Devon Great Consols as a copper mine, and not in the hope of getting tin.

Cordial votes of thanks were then passed to the Chairman, directors, and officers, and the meeting broke up.

BEDFORD UNITED MINING COMPANY.

At a half-yearly meeting of shareholders, held at the offices of the company in London on Wednesday (Mr. R. MCCALLAN in the chair), the accounts made up to Oct. 31, which had been previously submitted to the shareholders, were taken as read.

The CHAIRMAN, on proposing that the accounts should be passed and allowed, said that he was pleased to meet the shareholders this half-year under more favourable circumstances, as the improvement in the price of copper ore, and which he had every reason to believe would continue to improve, had not only proved beneficial to their finances, but had enabled them to make a profit of 130*l.* on the last two months' returns. He had every confidence in the management of the mine, and he thought that, as it was determined to increase the tutwork, a short time would prove the mine to be a thorough success. It was stated by a large shareholder that there seemed to be some dissatisfaction on the part of the representative of the lessee that sufficient work was not being carried on, and consequently the directors determined to ascertain, through some independent channel, what was considered necessary in the way of development, and they instructed the agent of the Duchy of Cornwall to make an inspection of the mine and a general report thereon. He considers that with the addition of driving the 150 east, as much tutwork is being carried on as circumstances justify, and a resolution was passed that the 150, 138, 127, and 115 fm. levels east be driven, and that any operations to the west of the shaft be deferred till some future time.

Capt. GOLDSWORTHY entered most fully into the present and future prospects of the mine, and with the aid of the plans explained to the shareholders the chances of further discoveries.

The CHAIRMAN said he felt great satisfaction with Capt. Goldsworthy, and proposed a vote of thanks to him expressive of confidence in his management.

A very pleasant meeting was brought to a close with the thanks of the shareholders to the Chairman.

SOUTH DARREN MINING COMPANY.

The ordinary general meeting of shareholders was held at the offices of the company, Austinfriars, on Wednesday,

Mr. BUSH in the chair.

The SECRETARY read the notice convening the meeting, and the following report of the directors:—

"In their last annual report your directors expressed their belief that the mine was proved to be a very valuable one, and that even with the rate of returns at that time—about 40 tons of lead ore per month—a fair profit would be made but for the depressed price of lead. At the date of the ordinary meeting in December, 1878, the lead ore from the mine fetched 14*l.* 7s. 6d. per ton, butafter that it gradually went down, till in May only 13*l.* 10s. 6d. was obtained. The price has since risen again to 16*l.* 12s. 6d., and more than that is expected for the 50 tons to be sold on the 28th inst. It may, therefore, be safely statad that with the present returns of lead and copper, and the existing prices, a good profit will be made, without calculating on the expected increase in quantities and advance in prices. During the past year a considerable sum has been expended in strengthening the engine-shaft, repairing the drawing machinery, slime-floors, water-courses, &c. For several months also the best ore ground could not be worked owing to unavoidable causes, explained in Capt. James's report, while the average prices received for the lead and copper have been exceedingly low, and yet for the year a profit has been made. For the last six months (during about two months of which the water was in the bottom of the mine) the profit is 543*l.*, and for October alone, when the copper is sold, it will be about 357*l.* Your directors have, therefore, the best grounds for anticipating the early commencement of dividends, which they believe, with Capt. James, will not only be lasting but increasing. As there are many new shareholders, it may be well to state that the company hold the mine on lease for 21 years from March, 1875, at 1-16th dues, but the lessor (Sir Pryse Pryse) has lately agreed to lower them to 1-20th for 12 months ending Michaelmas, 1880. By the Articles of Association Mr. George Blogg, one of your directors, retires from office, but, with the auditors, offers himself for election."

The agent's report and statement of accounts were taken as read.

The CHAIRMAN moved—"That the directors' report and accounts now presented be received and adopted, and, together with the agent's report, be printed and circulated amongst the shareholders."

Mr. SCHOFIELD seconded the motion.

Mr. BROMFIELD asked how it was that though the lease was granted in 1875 the expenses were only charged now?——The SECRETARY replied that the lease was not completed until September last.

Mr. HALES (the solicitor) added that the lessor's solicitors quietly shelved the lease for a whole year.——Mr. SCHOFIELD: They were not in a hurry.

Mr. BROMFIELD asked what was the meaning of "rents" in the item of royalty and rents? What other charges had the company to pay besides royalty? These rents were not in the previous six months' accounts.——The SECRETARY said the rents were for the water-courses and dressing-floors. They were in the previous accounts, and the words "partly estimated" referred only to the last two sales; all the rest were positive. When the accounts were made up they had not received the weights of the last two sales.

Mr. BROMFIELD said credit was taken for 100*l.* for copper which was not sold.

Mr. SCHOFIELD said it was an asset, and it was quite right to regard it as such.

The SECRETARY added that 25 tons of this was dressed, and was worth 125*l.*, but they would have double that quantity ready before the end of the year. Several of the shareholders, and Mr. Bromfield amongst others, had recommended the sinking of the eastern engine-shaft, and driving one of the levels to come under it, but it would not be advisable to do so at present.

Mr. SCHOFIELD thought it would be unwise to sink the engine-shaft until the bottom level was driven more, as they did not want ventilation at present.

Mr. BROMFIELD said that Captain Eddy strongly advised that the eastern part of this property should be developed, and recommended that the 100 east should be driven, and Captain James was in October last of the same opinion, and yet nothing had been done towards developing it.

Capt. JAMES thought it would be better to wait until they had seen more of the lode, for at present they had only driven the 110 fm. level 7 or 8 ft. The 100 had been driven 9 or 10 ft. The 110 was in productive ground, and there was no risk there, while there would be in sinking the shaft at present.

Mr. SCHOFIELD said the sinking of the shaft would add 60*l.* a month to their costs. He asked how many ends were being driven, and how many men the company were employing underground?

Capt. JAMES said they had four ends, and for the underground work they had about 100 men on tribute and tutwork and drawing stock. The monthly cost was about 490*l.* Including surface hands they employed about 115 men. In reply to further questions, he said the lode had improved from the top of the 100, and there was now a good lode in the bottom of the shaft. He was anxious to see more of the 110 before sinking the engine-shaft. It would take about two months or nine weeks to sink the winze from the 100 to the 110 It was already down about 5½ ft. The ore raised was principally from the 90 and 100, but they were driving the 110 with all the force possible. The reserves were now about 1600 or 1700 tons. They had about 300 fms. of ground to the west of Bishop's shaft. All the ends were in productive ground. The mine was looking very encouraging in the bottom, and he was anxious to lengthen the ore ground as much as possible before deepening the mine too much, for the deeper they got the more men they had to employ. The drivages were paying costs now, and directly he proved the lode in the 100 he would advise the sinking of the shaft. His great aim was to gradually and permanently increase the returns and dividends. He had been at the mine for three years, and he had always worked it in a miner-like manner.

The SECRETARY said Mr. Walter Eddy inspected the mine 13 months ago, and said that 50 or 60 tons of ore might be raised without any exertion, but he did not advise that the returns should be increased until the 100 fm. level was holed to the winze. This has now been done, as had also the dead work which Mr. Eddy at the same time recommended.

Capt. JAMES, in reply to a question as to the interruption of work owing to the floods, said the flood which stopped the work was of such a character as could not be remembered by the oldest man in the place. The river course had since been widened, and he did not think there was any fear of a similar misfortune even if another such a serious flood such occur. They had put down new drains, and he believed the property was effectually secured from a recurrence of flooding.

The CHAIRMAN said he had been down to the mine since the flood, and he believed that even if they had the same quantity of water again the workings would not be interrupted. During the three years in which he had been connected with the company he had been down to the mine 14 or 15 times, and both at surface and underground looked very different now to what they did when he first went there. At that time the water-wheel was nearly tumbling down, and the drawing tackle was in a bad condition, but all this had been altered, and they could now draw from 10 to 14 skips an hour. They had jiggers now instead of hand-wheels. The mine was a good one without a doubt, and he thought that in a short time he would have the pleasure of signing some cheques for dividends. If things went on as they were he thought they would have a dividend by the beginning of January.

The SECRETARY added that the Chairman had shown his confidence in the mine by gradually increasing his holding in it, until he now had nearly 600 shares.

In reply to a suggestion from Mr. BROMFIELD that the costs should be reduced, Capt. JAMES said he would rather see the costs increased than diminished, for increased costs would give them increased returns and increased profits.

The report and accounts were then unanimously adopted.

The CHAIRMAN proposed the re-election of the retiring director, Mr. George Blogg.——Mr. GOULD SHARP seconded the motion, which was carried unanimously.——The SECRETARY, in reply to a question, said the directors met the other day to elect a director; but, as they had not a quorum in the absence of Mr. Blogg, they could not elect the gentleman chosen—Mr. Schofield. However, when Mr. Blogg returned from Spain a board meeting would be held, and a director elected.

Messrs. Brandt and Stansfield, the auditors, were re-appointed, and the meeting closed with votes of thanks to the Chairman and directors, Mr. Murchison, and Capt. James.

VANCOUVER COAL MINING AND LAND COMPANY.

The half-yearly general meeting of shareholders was held at the offices of the company, Cannon-street, on Tuesday,

Mr. JOHN GALSWORTHY in the chair.

Mr. SAMUEL M. ROBINS (the secretary) read the notice convening the meeting. The report and accounts were taken as read.

The CHAIRMAN said: The shareholders would have observed that the company had done better this half-year than last, having made a profit, whereas in the previous half-year they made a loss. They had had great difficulty in scraping that profit together, and but for the retrenchments made, and the fact that the output had been larger, the difficulty would not have been overcome. As it is, they had succeeded in getting together a profit, which has enabled them to write off the debit balance—2170*l.*—for the previous half-year, and after doing that and appropriating the usual amount to the reserve funds, there was a small balance of 880*l.* left. Some of his colleagues thought it would be better to pay a dividend with that balance, though that was scarcely his own opinion; but with a small amount from the reserve fund they would be enabled to pay a small dividend, and he thought the shareholders would not object to that. To some extent the report was a satisfactory one, but it was only in a certain sense it was so, because, as he had stated before, it was only by retrenchment and increased output that they had succeeded in making a profit. Prices were as bad as ever, and there was no immediate prospect of their getting better, and competition was as great as ever, so that the present position of affairs does not look very flourishing—that is to say, there was no chance of an improved market. The most noticeable point in the report, beyond the question of profit and dividend, was that with regard to the boring. It would be seen that they had made considerable progress with the diamond borer, and as the paragraph on this matter was important he would read it. The paragraph said:—

"After three years of exploration with the diamond borer in the southern portion of the estate, the directors are able to report that, on the whole, satisfactory results have been arrived at. In an area of two square miles six bores have been sunk to an aggregate depth of 3717 ft., and in five of them a seam of coal has been found, varying in thickness from 3½ to 14½ ft. Three shallow bores were also sunk to a total depth of 294 ft. by the ordinary hand rods, and it is now proposed to deepen a small shaft near one of these in order to make a closer examination of the seam. There is no doubt that the coal found is the Douglas seam, but of a greater average thickness than where worked hitherto, and that of the 1600 acres comprised in the southern portion of the estate coal exists in at least 1250 acres."

They seemed to have made a thorough examination of the coal field, and it was extremely satisfactory to see that, so far as could be ascertained, they had a very large area of coal. He had before made statements as to the quantity of coal likely to be discovered in other parts of the property, and he had turned out to be wrong, not from any fault of his own, but owing to the mining manager not having taken into account the probability of faults occurring; but in this case the examination had been much more complete than anything they had had before, and they might fairly assume they had a very large area of coal, which they might look forward to working with advantage if prosperous times again overtook them. So far as getting the coal was concerned he looked to the prospects with no drawback from his former expectations. Financially they were better off than they were, as they had paid off 2700*l.* of the debentures, and though this did not affect the accounts now presented he thought it would be satisfactory to know it; and what was formerly an asset of unrealised coal in the bin had been converted into cash. He was sorry that he could not report any improvement in prices, or that they had succeeded in getting down the wages of the men. He was in hopes that the men would, in consideration of the exceedingly unfavourable price, have consented to a reduction in their wages; but they had not yet done so. He hoped to be able to report more favourably upon the position of the company at the next meeting, and he moved the adoption of the report and accounts.——Mr. F. TENDRON, in seconding the motion, congratulated the meeting on the present position of the company as compared with twelve months ago. He thought the remarks of the Chairman very moderate and truthful; and in calling attention to the miscalculation in the Fitzwilliam Mine, he had not failed to tell the shareholders that the new field which might be laid open was of a different character, and it had to a certain extent been tested by boring holes, so that if a favourable market ensued at any moment they would be in a position to take advantage of it. The Diamond boring machine revealed the fact that they had a coal field equal to two square miles, and taking it at a most moderate computation they had upwards of thirty years' supply, only allowing one ton to the square yard—3,000,000. Perhaps the Chairman could state what on a fair average the new field might be estimated to yield?——The CHAIRMAN said it was estimated at 10,000,000 tons, but he had not mentioned that. The cost of the boring, exclusive of the apparatus, was 3000*l.*

Mr. TENDRON said that was a mere trifle, and under the circumstances he hoped the directors would take advantage of the money in hand to make preparations, so that when the market improved they might not be twelve months behind. Comparing their present position to what it was twelve months ago—taking the coal, the cash, and the amount the company owed—he found that they were better off now than then to the extent of very nearly 8000*l.*, which was equal to a dividend of 10 per cent., besides the dividend proposed of 1¼ per cent. He thought the board were wise in the measures they had taken, and in paying this small dividend. (Hear, hear.) It would take the company out of the Non-Dividend and put it in the Dividend List, and it would give the shareholders confidence and courage. Mr. Tendron also expressed a hope that the directors would see their way to lessening the proportion placed to reserve.

Mr. BLUNDELL suggested that the tonnage, as well as the value of the coal in bin and in transit, should be given, and asked whether the coal was of that quality which would keep without material deterioration? He also asked if the company's investments were still in Metropolitan 3½ per cent.? and joined with Mr. Tendron in approving of the policy of paying a small dividend.

Mr. ROBINSON asked if the item of commisson for selling the coal had been done away with?——The CHAIRMAN said it had not, but it had been considerably reduced. In reply to the other questions and remarks the Chairman said he would be only too happy if they could keep in the Dividend-Paying List, but they could not do that at the cost of what they considered to be the proper policy to adopt. If they determined to work the new field they would have to spend a large amount of money in opening up a new mine, and they must not forget the other properties which they had worked for a time and abandoned, or suspended working. It would be extremely injudicious to give the value of the coal in transit for everybody to see. It was not desirable to store the coal to any large extent. The investments continued to be exactly the same.

After some further discussion on the question of the proportion of reserve the report and accounts were unanimously adopted.

Mr. FRY moved the declaration of a dividend of 2s. 6d. per share on the paid-up shares, and 1s. 6d. per share on the ordinary shares, free of income tax.

Mr. C. J. HILL seconded the motion, which was carried.

Votes of thanks having been passed to the Chairman and directors, the meeting closed.

[For the remainder of Meetings, see to-day's Journal.]

ALMADA AND TIRITO CONSOLIDATED SILVER MINING COMPANY (LIMITED).

DIOS PADRE MINE.—Capt. N. C. Morcom, Sept. 22: The stopes in the back and bottom of No. 1 level north are yielding a fair quantity of green ore of a good ley. The lode in the end going north appears to be getting more compact than for some time past. The past of the mine has given us a considerable quantity of green ore during the past twelve months—*i.e.*, the Cruz Verde stopes, and level north of the shaft, and the present place arrived at in Dios Padre sett. We rather wonder why the old workers should have left so much docile ore standing so near the surface. It probably escaped their notice. As to the amount of ore ground ahead of us, we can form no idea. As the surface excavations are very extensive we can only hope that the future will be as good or better than the past.

Oct. 6: The end driving north is looking well at present, and yielding stones of fine green ore. The stopes in the back and bottom of the level have produced ore in fair quantity since last reported.

MINA GRANDE.—Sept. 22: The big black ore stope below tunnel yields its usual quantity of black ore. The end driving north in this stope, towards the old Almada winze, is in a splendid lode. The object of this end is to strike the mentioned winze, in order to have deads to fill up the stope. The 12 fm. level north I regret to say is still idle on account of the want of wood to draw the water. It being the wet season, wood carriers are exceedingly hard to get at any price. The 12 should be kept continually going if possible, and the development of this part of the mine pushed with great vigour. The result of the samples assayed in England is very encouraging, and I trust that with a successful treatment of the ores here a long and bright future is before the Mina Grande part of our mine.

Oct. 6: The lode in the end driving north of the black ore stope below tunnel contains more quartz and felspar than formerly; it is still, however, a very productive lode. The lode in the stope is, as usual, producing a great deal of black copper ore and a fair quantity of galena. We had hoped to have resumed operations in the 12 ere this, but the boiler having sprung a leak time has been lost in repairing it.

LA VIRGEN.—Sept. 22: The eastern branch in the stope above tunnel level is 6 ft. wide, and very orey. The stope further south produces a fair quantity of black ore. The stope in the 10 is producing a good deal of second-class black ore. The end driving south of the east cross-cut at the 10 is communicated to the footway winze. We hope this new driving in this level on the east, or Virgen branch, has opened up a considerable quantity of black ore. The lode in the end driven has not been what we might term rich; nevertheless, it is fairly productive, and, judging from appearances, should yield a fair profit for working.

Oct. 6: The stopes in the back of tunnel have undergone no change for the worse of late; green ore is the principal product at present. The stopes in the back of the 10 are orey, and may improve as we open out the ground. We have just commenced a short winze below the 10 on the Virgen branch, in order to communicate with the end now driving north of the arch of ground north of the Tirito.

LA PROVIDENCIA.—Sept. 22: In the big green ore stope above tunnel no change has taken place since last reported. The usual amount of ore is still produced.

Oct. 6: The orey part of the lode in the big green stope is getting more contracted. Several feet have been driven through the lode west, in order to prove if any ore ground existed further in that direction, but nothing of value has been discovered.

TIRITO.—Sept. 22: The rise in the back of the 20 is still in a nice lode of black ore. The end started north of the new winze below the 10, towards the arch of ground between the 10 and the 20, is in communication with the desired point. The timbermen are securing the ground preparatory to working the same (the arch). In the next report we hope to give you some details respecting it.

Oct. 6: We have spilled through and secured the weak ground at the south end of the arch of ground we have formerly spoken of. The length of the arch is 95 ft., with an average height of (say) 8 ft. The lode is from 2 to 4 ft. wide. An end is started north to communicate with the new winze in the Virgen at the 10. The object of this is to have a road to bring back deads to fill up the excavation that will be made in taking away the arch. The end is in paying ground at present, and will probably add a great many feet to the length of ore ground to be taken away. The rise in the back of the 20 has a nice compact lode. This is situated just under the south part of the arch below the 10.

SAN PEDRO.—Sept. 22: The lode or branch east of the horse is now all taken away up to the old workings. The west part of the lode still continues good. How long it will last we can form no idea. All depends on what the old workers did. During the past two weeks we have been driving and stoping to the south-east part of the stope, but not with very encouraging results. The lode consists chiefly of country rock, with occasional lumps of rich green ore. Operations will be continued as long as it pays expenses.

Oct. 6: The west part of the lode still holds good, and is yielding a good deal of green ore. The south-east part of the stope is poor, and suspended for the present.

TRIBUTERS.—Sept. 22: We have one fairly productive tributers' pitch—apart from the Dios Padre—at the Providencia. The San José tributers are, and have been for a long time, working at a great loss to themselves.

J. H. Clemes, Sept. 23: With the exception of the main ore chamber at Mina Grande the black ore lodes at this moment are dredgy, and a good deal of mechanical preparation has to be resorted to to get clean ore.

MINA GRANDE.—Oct. 4: The water is now being pumped out for working in the 12. The stope above has of late been doing double duty. All the export ore that can be obtained by hammer dressing shall be remitted, as was done with the 15 ores: 110-oz. rock was scarce in the 15, although a good deal of 65-oz. rock was produced, which accounts for the yield of precipitate in February last. We shall attack vigorously the bottom of this place at the same time as the 12 workings; once obliged to keep the water down the more ground broken for a given engine cost the better. One great point in working the main stope at Mina Grande is that a given working area will yield a great deal more solid ore than an equal surface in the Tirito.

Oct. 11: There has been a delay in starting operations in the 12; the boiler and pitwork have had to receive repairs. The main ore chamber between tunnel level and the 12 is producing as usual.

TIRITO.—With the exception of a falling off in the big stope at Providencia the various workings in the Tirito and Providencia are holding their own. The cross-cut from the north of the Providencia stope not having discovered anything, one will now be driven from the south of the same stope in search of a small branch supposed to exist there.

MINA GRANDE.—Oct. 18: In the 12 the water has been hauled out, and the contractors will begin to work on Monday. These and the 15 workings will be pushed vigorously. Very little black ore has been taken out during the present week, the main ore chamber having had to be filled up with debris. The Providencia stope has produced about as usual, although the pay shoot is shorter than it was a few feet lower down. The cross-cut we spoke of trying at the south part of this stope is being driven by day only; the ground is favourable for working, and the cost, including material, will not exceed $6 or $7 per foot. The Virgen workings above the tunnel level are now producing mostly green ore. In the workings on the same lode, below tunnel level, the black ores contained are very largely mixed with gangue.

In the Cruz Verde a poor belt is being worked just now; the grade of the rock very often varies in this little mine.

Mr. Clemes forwarded to the directors on Oct. 23 the following telegram:—"Profit for the quarter ending 30th September, $8815."

REDUCTION OF TEMPERATURE.

At first sight the theory of ice-making machines would appear to have but little interest in connection with mining, but a very brief study of the translation of the Treatise* of Mr. Ledoux, ingenieur des mines, will not only cause this opinion to be modified, but will explain why the matter has been taken up by a mining engineer. The question is one which has a direct bearing upon the construction of air-compressing machinery, which is at present indispensable for operating rock drills, now being so generally introduced in connection with industrial mining, but may hereafter be of paramount importance in facilating the working of deep lying coal seams and mineral veins in mines where the temperature increases with the depth; which however, from recent observations in the United States, does not appear to be universally the case, inasmuch as instances are recorded in the Western States of actual decrease of temperature in proportion to the depth attained. It has long been known that air is heated or cooled when compressed or dilated, and the mechanical theory shows that these effects are proportioned to the external work performed by the air, with the restriction that in expanding the resistance overcome by the gas is always equal to the elastic force of the latter. From the similarity between heat motors and freezing machines, it results that all the equations deduced from the mechanical theory of heat to determine the performance of the first apply equally to the second, but, unlike the heat motors, the freezing machines possess the greatest efficiency when the range of temperatures is small and when the final temperature is elevated.

The value of such machines in the production of low temperatures in deep and hot mines will be apparent, so that the treatise may be usefully studied by many with whom that object is the only one for which the ice is required, and it cannot be doubted that the attentive study of the principles laid down will greatly facilitate the attainment of maximum economy and efficiency in the construction of air compressors. The treatise is clear and explicit, and the translation appears to be admirably made; it is, therefore, entitled to a wide circulation among all interested in utilising the effects of change of fluid temperature, whether for simple refrigerating in deep mines, holds of ships, or warm climates, or for the compression of air to be subsequently used for industrial purposes. The volume affords precisely that kind of sound scientific information without which the practical man is necessarily at a disadvantage.

SOUTH AMERICAN GEOLOGY.—An interesting "Contribution to South American Geology," by Mr. GEORGE ATTWOOD, F.G.S., A.I.C.E., with an appendix by the Rev. Prof. T. G. Bonney, M.A., F.R.S., Sec. G.S., which formed the subject of a communication to the Geological Society, has been reprinted from the Transactions in separate form. The memoir refers to a tract of country about 150 miles long, commencing from Puerto de Tablas on the Orinoco river, in the State of Guayana, Venezuela, and taking a south-easterly direction into the interior as far as the Caratal gold district. The diabase rock occupies a large area, and in it are found the gold-producing veins of the Caratal mining district. The veins are very quartzose and numerous, and all contain gold; but, owing to the present high rate of wages, and the great cost of procuring supplies from the Orinoco river, only eight or nine of the richest are now being worked. The Chile vein is one of the principal ones, and it has been traced about one mile in length. It has a dip of 55° to the south, and an east and west strike; it averages in thickness about 4 ft., andis a true fissure vein The yield of gold at 200 ft. in depth gave between 5 and 6 ozs. of standard gold to the ton (2000 lbs.), whilst near the surface it only turned out about 1 oz. per ton. A large quantity of gold was extracted in the form of nuggets and small grains by washing in wooden bowls (bateas) the alluvial soil in the vicinity of the outcrops. The present yield of gold from the Caratal and Las Pastora mining districts is about 130,000 ozs. per annum, but it is rapidly increasing as the country is becoming more populated. About 30 miles due west from Potosi a new district has lately been opened; large quantities of gold nuggets have been found close to the surface in the alluvial soil, and gold-bearing veins have been discovered near the washings. The rock is diabase, and similar to that of the Caratal district. The independent examination made by Professor Bonney from microscopical sections alone as to the character of the rocks agree closely with the observations made by Mr. Attwood himself in the field. The paper is illustrated by a map, showing the course of the Orinoco river from Barrancas to the city of Bolivar, and giving a section of the district referred to.

At the Auction Mart, Messrs. Edwin Fox and Bousfield sold parts of King's shares in the New River Company, at the rate of 95,250*l.* per share, and parts of Adventurers' shares in the same undertaking at 98,250*l.* per share; they also sold 25 new shares of 100*l.* each, fully paid-up at 345*l.* to 355*l.* per share.

* "Van Nostrand's Science Series Ice-making Machines: the Theory of the Action of the various forms of cold producing or so-called Ice Machines." Translated from the French of M. LEDOUX, Ingénieur des Mines. New York: Van Nostrand, London: Trübner and Co., Ludgate Hill.

FIRST PRIZE MEDAL,

ROYAL CORNWALL POLYTECHNIC SOCIETY, 1878.

Rate of Drilling, three to four times as fast as hand labour.

Prices complete, £55 to £70.

JORDAN'S PATENT
HAND POWER ROCK DRILL.

SPECIALITIES—
PATENT PNEUMATIC
HAND & STEAM POWER
STAMPS, CRUSHING ROLLS,
PATENT PROSPECTING PLANT, &c.

T. B. JORDAN, SON, AND MEIHE,
ENGINEERS AND CONTRACTORS,
63, QUEEN VICTORIA STREET, LONDON, E.C.,
AND AT
21 AND 22, LINDENSTRASSE, BERLIN, S.W.

SOLID DRAWN BRASS AND COPPER BOILER TUBES,

FOR LOCOMOTIVE OR MARINE BOILERS,
EITHER
MUNTZ'S OR GREEN'S PROCESS.

MUNTZ'S METAL COMPANY (LIMITED),
FRENCH WALLS,
NEAR BIRMINGHAM.

PATENT DUPLEX LAMPS,

FOR COLLIERIES, IRONWORKS, &c.
SUITABLE FOR PIT BANKS, ENGINE HOUSES, &c., &c

Each Lamp gives a light equal to 26 candles.
No Breakage of Chimneys from Heat.
Cottons last three months.
Will burn any Mineral Oil.

S. HOOPER,
LAMP MAKER & OIL MERCHANT
LOWER TEMPLE STREET,
BIRMINGHAM.

N.B.—Lamps made suitable for every purpose.
The BEST SIGNAL BELL MADE for MINING PURPOSES.
ILLUSTRATIONS ON APPLICATION.

READE BROTHERS,

TOWER VARNISH WORKS,
NECHELLS, BIRMINGHAM,
MANUFACTURERS OF
High-class Varnishes and Japan,
For COACH & RAILWAY WAGON BUILDERS,
ENGINE BUILDERS, CONTRACTORS, COLLIERY and GENERAL ENGINEERS,
LAMP MANUFACTURERS,
AGRICULTURAL IMPLEMENT MANUFACTURERS,
DECORATORS, &c.
Lists and Samples on application.

HEPBURN'S
PUMP LEATHER
WATERPROOF

By a special method of preparation this leather is made solid, perfectly close in texture and impermeable to water; it has, therefore, all the qualifications essential for pump buckets, and is the most durable material of which they can be made. It may be had of all dealers in leather, and of—

HEPBURN AND GALE,
TANNERS AND CURRIERS,
LEATHER MILL BAND AND HOSE PIPE MANUFACTURERS,
LONG LANE, SOUTHWARK, LONDON.
Prize Medals, 1851, 1855, 1862, for
MILL BANDS, HOSE, AND LEATHER FOR MACHINERY PURPOSES.

Just published, cloth limp, price 1s. 6d.,
THE COLLIERY READY-RECKONER AND WAGES CALCULATOR.
By JAMES IRELAND.

"Will be the means of preventing many disputesbetween pay clerks and colliers."—*Mining Journal.*
To be had on application at the MINING JOURNAL Office, 26, Fleet-street, E.C.

BICKFORD'S PATENT
FOR CONVEYING
CHARGE IN
SAFETY FUSE
FIRE TO THE
BLASTING ROCKS, &c.

Obtained the PRIZE MEDALS at the "ROYAL EXHIBITION" of 1851; at the "INTERNATIONAL EXHIBITION" of 1862 and 1874, in London; at the "IMPERIAL EXPOSITION," held in Paris in 1855; at the "INTERNATIONAL EXHIBITION," in Dublin, 1865; at the "UNIVERSAL EXPOSITION," in Paris, 1867; at the "GREAT INDUSTRIAL EXHIBITION," at Altona, in 1869; TWO MEDALS at the "UNIVERSAL EXHIBITION," Vienna, in 1873; and at the "EXPOSICION NACIONAL ARGENTINA," Cordova, South America, 1872.

BICKFORD, SMITH, AND CO., of TUCKINGMILL, CORNWALL; ADELPHI BANK CHAMBERS, SOUTH JOHN STREET, LIVERPOOL; and 85, GRACECHURCH STREET, LONDON, E.C, MANUFACTURERS AND ORIGINAL PATENTEES of SAFETY FUSE, having been informed that the name of their firm has been attached to fuse not of their manufacture, beg to call the attention of the trade and public to the following announcement:—

EVERY COIL of FUSE MANUFACTURED by them has TWO SEPARATE THREADS PASSING THROUGH the COLUMN of GUNPOWDER, and BICKFORD, SMITH, AND CO. CLAIM SUCH TWO SEPARATE THREADS as THEIR TRADE MARK.

BENNETTS' SAFETY FUSE WORKS,
ROSKEAR, CAMBORNE, CORNWALL.

BLASTING FUSE FOR MINING AND ENGINEERING PURPOSES
Suitable for Wet or Dry Ground, and effective in Tropical or Polar Climates.

W. BENNETTS, having had many years' experience as Chief Engineer with Messrs. Bickford, Smith, and Co., is now enabled to offer Fuse of every variety of his own manufacture, of best quality, and at moderate prices.
Price Lists and Sample Cards may be had on application at the above address.
LONDON OFFICE—H. HUGHES, Esq., 85, GRACECHURCH STREET.

THE SANDYCROFT FOUNDRY AND ENGINE WORKS COMPANY (LIMITED).
NEAR CHESTER
Late the MOLD FOUNDRY COMPANY. Established 1838.)
MAKERS OF
MINING MACHINERY,
CORNISH PUMPING, WINDING, AND EVERY OTHER DESCRIPTI OF ENGINE,
PITWORK, BOILERS, FORGINGS,
WATER-WHEELS, ORE CRUSHING, STAMPING, AND DRESS MACHINERY,
GOLD AND SILVER AMALGAMATING MACHINERY,
MINING TOOLS,
ROCK DRILLS, AIR COMPRESSING ENGINES, and all the necessary accessories for MACHINE BORING.
SPECIAL ATTENTION given to MACHINERY for FOREIGN MINES.
SECOND-HAND MINING MACHINERY FOR SALE.
LONDON AGENT:—MR. JOHN F. PEARSE,
6, QUEEN STREET PLACE, SOUTHWARK BRIDGE, E.C.

THE BIRMINGHAM RAILWAY CARRIAGE AND WAGON COMPANY
(LIMITED)

MANUFACTURE RAILWAY CARRIAGES and WAGONS of EVERY DESCRIPTION, for HIRE and SALE, by IMMEDIATE or DEFERRED PAYMENTS. They have also WAGONS FOR HIRE capable of carrying 6, 8, and 10 tons, part of which are constructed specially for shipping purposes. Wagons in working order maintained by contract.
MANUFACTURERS also of IRONWORK, WHEELS, and AXLES.
EDMUND FOWLER, Managing Director.
WORKS,—SMETHWICK, BIRMINGHAM.

CALIFORNIAN AND EUROPEAN AGENCY.
209, LEIDESDORFF ST., SAN FRANCISCO, CALIFORNIA.

THIS AGENCY is prepared to make Investments in approved REAL ESTATE, MINING PROPERTIES, MINING STOCKS, &c., and to INVEST MONEY in FIRST-CLASS SECURITIES in CALIFORNIA, and the neighbouring States.
Also to AFFORD INFORMATION and ADVICE to parties abroad who may contemplate or may have already invested in Enterprise on the Pacific Coast, and to take charge of Property, and to look after the interests of absentees.
EDWARD J. JACKSON, 209, Leidesdorff-street, San Francisco, Cal.
REFERENCES:
Wm. Lane Booker, Esq., H. B. Majesty's Consul, S. F.; the Honorable Leland Stanford, Ex-Governor of California and President of the Central Pacific Railroad, S. F.; the Right Rev. Wm. Ingraham Kip, D.D., LL.D., Bishop of California; the Rev. William Vaux, Senior Chaplain U.S.A., Santa Cruz, Cal.; the Anglo-Californian Bank, San Francisco, California; the Anglo-Californian Bank, No. 3, Angel-court, Throgmorton-street, London, E.C.

MEXICO, NEW MEXICO, ARIZONA, UTAH, NEVADA AND CALIFORNIA.

F. M. F. CAZIN,
MINING AND CIVIL ENGINEER,
At BERNALLILLO, NEW MEXICO, U.S. OF AMERICA.

Has 24 years' experience in Mining and Smelting, and 10 years experience in American Business and Law, offers his services at moderate chargesfor Reporting on Mining and other Property in any of the above-named States or Territories gives correct, safe, and responsible advice as to securing full titles and possession and, as to best mode of utilising the property, will assist in settling existing difficulties by compromise, and in disposing of developed mining property when held at real value; offers his assistance for securing undeveloped mining properties at home prices. As to care taken in reporting, reference is made to the *Mining Journal* Supplement, April 1, 1876, containing a report on property of the Maxwell Land Grant and Railway Company; as to technical standing, to the prominent men of the trade—compare *Mining Journal* of Aug. 30 and Nov. 31, 1872, and *New York Engineering and Mining Journal*, Feb. 28, 1874.

SPAIN AND PORTUGAL.

MR. J. T. JOHNSON, Assoc. Inst. C.E., F.G.S., &c., CIVIL and MINING ENGINEER, late of Chester and South Wales, having joined his Brother, Mr. T. M. JOHNSON, who for the last 13 years has been engaged in Mining in Spain and Portugal, is prepared to INSPECT PROPERTIES and CARRY OUT GENERAL MINING and ENGINEERING WORKS in those countries. ADDRESS: CORREIO DO CORVO, PORTUGAL.

MR. W. F. STANLEY, MATHEMATICAL INSTRUMENT MANUFACTURER TO H.M.'S GOVERNMENT, COUNCIL OF INDIA, SCIENCE AND ART DEPARTMENT, ADMIRALTY, &c.
MATHEMATICAL, DRAWING, and SURVEYING INSTRUMENTS of every description, of the highest quality and finish, at the most moderate prices.
Price List post free.
ENGINE DIVIDER TO THE TRADE.
ADDRESS—GREAT TURNSTILE, HOLBORN, LONDON, W.C.

CAPTAIN ABSALOM FRANCIS, M.E.,
MINING AND COMMISSION AGENT,
GOGINAN, ABERYSTWITH.

Those gentlemen who have acted on my advice this year may now realise 300 per cent on purchase, and investments immediately made as recommended will command a like result before the close of 1879. ABSALOM FRANCIS.

This day, crown 8vo., with numerous Wood Engravings, 12s. 6d., cloth, postage 7d.

A TREATISE ON METALLIFEROUS MINERALS AND MINING,
By D. C DAVIES, F.G.S., Mining Engineer, &c.,
Author of "A Treatise on Slate and Slate Quarrying."

"This book is designed to describe, in a concise and systematic manner, the conditions under which metals and metallic ores are found in the different countries of the world.
It is hoped that such a description will serve, first, to explain to some extent the origin of deposits of metalliferous minerals; and, secondly, by defining the zones occupied by the various metallic ores, to lessen somewhat the amount of unsuccessful search for them."—*Extract from Preface.*
CROSBY LOCKWOOD and Co., 7, Stationers' Hall-court, London, E.C.

Wheal Peevor, West Peevor, Wheal Boys, Wheal Prussia, North Treskerby, Wes Tolgus, East Pool, South Crofty, Carn Brea, Tincroft, Cook's Kitchen, Dolcoath, West Frances, South Frances, West Basset, Wheal Basset, Penstruthal, Comford, South Condurrow, Tolcarne, and all other adjacent and surrounding Mines in the parishes of Camborne, Illogan, Redruth, and Gwennap.

A MAP, showing the present Boundaries, &c., of the above Mines, coloured, but unmounted, for 10s. 6d., or mounted on cloth and rollers for 15s., may be had, carriage free, from the Author, R. SYMONS, 11, Parade, Truro on his receipt of P. O. Order for the amount.

THE IRON AND COAL TRADES' REVIEW,
The IRON AND COAL TRADES' REVIEW is extensively circulated amongst the Iron Producers, Manufacturers, and Consumers, Coalowners, &c., in all the iron and coal districts. It is, therefore, one of the leading organs for advertising every description of Iron Manufactures, Machinery, New Inventions, and all matters relating to the Iron, Coal, Hardware, Engineering, and Metal Trades in general.
Offices of the Review: 7, Westminster Chambers, S.W
Remittances payable to W. T. Pringle.

Now ready, price 3s., by post 3s. 3d., Sixth Edition; Twentieth Thousand Copy, much improved, and enlarged to nearly 300 pages.

HOPTON'S CONVERSATIONS ON MINES, between Father and Son. The additions to the work are near 80 pages of useful information, principally questions and answers, with a view to assist applicants intending to pass an examination as mine managers, together with tables, rules of measurement, and other information on the moving and propelling power of ventilation, a subject which has caused so much controversy.
The following few testimonials, out of hundreds in Mr. Hopton's possession, speak to the value of the work:—
"The book cannot fail to be well received by all connected with collieries."—*Mining Journal*
'The contents are really valuable to the miners of this country"—*Miners' Conference.*
"Such a work, well understood by miners, would do more to prevent colliery accidents than an army of inspectors."—*Colliery Guardian.*
London: MINING JOURNAL Office, 26 Fleet-street, E.C., and to be had of all booksellers.

GRAND EXPLOSIVE COMBINED WITH PERFECT SAFETY.
MINING MADE EASY—POWER without DANGER.

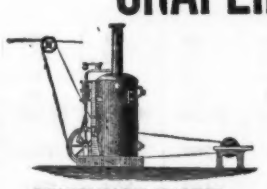
The Liverpool Cotton Powder and Ammunition Company's
SAFETY COTTON BLASTING POWDER

Is the SAFEST, STRONGEST, and most ECONOMICAL in WORKING of all EXPLOSIVES. The MINERS, AFTER a shot is fired, can IMMEDIATELY re-commence work. Absolutely SAFE in TRANSIT by boat or rail. PAR EXCELLENCE in every description of MINING, QUARRYING, TUNNELLING, EXCAVATING and SUBMARINE operations. Entirely free from Nitroglycerine.
Offices: 39, OLD HALL STREET, LIVERPOOL. Works: MELLING, near LIVERPOOL.
AGENTS.—The Company have a few VACANCIES in the chief Mining Districts for really GOOD and thoroughly PRACTICAL MEN. Apply to the Secretary, DAVID ANDERSON, personally, or by letter at the Offices of the Company.

WILLIAM EDWARDS AND SON,
Griffin Works, Wolverhampton,
MANUFACTURERS OF

Edge Tools, Spades and Shovels. Hand, Sledge, Stone Quarry, and Mining Hammers, Railway Contractors' and Mining Tools. Axes, Adzes, Pickaxes, Crow and Boring Bars, Wrought-iron Wheelbarrows.
The Original and Only Manufacturers of Best Crown Quality of Horse Shoes
PATENTEES and MANUFACTURERS of PATENT PUNCHED EYE PICKAXES, HOES, HAMMERS, ADZES, and other TOOLS.
Under Patent No 4698.

CHAPLIN'S PATENT PORTABLE STEAM ENGINES AND BOILERS.


STATIONARY ENGINE.
No Building required.

HOISTING ENGINE.
With or without Jib.

*STEAM CRANE.
For Wharf or Rail.

CONTRACTORS' LOCOMOTIVE.

SHIPS' ENGINE AND DISTILLER.

PUMPING AND WINDING ENGINE.

* *These Cranes were selected by H.M. Commissioners to receive and send away the Heavy Machinery in the International Exhibitions* 1862, 1871, *and* 1872.

The ORIGINAL combined Vertical Engines and Boilers, introduced by Mr. ALEX. CHAPLIN, specially designed and adapted for
PUMPING, WINDING, HOISTING, SAWING, DRIVING MACHINERY, and for GENERAL CONTRACTORS' WORK, RAILWAY SIDINGS, COAL MINES, QUARRIES, GAS WORKS, &c.

WIMSHURST, HOLLICK, & CO., ENGINEERS, 2, WALBROOK, LONDON, E.C.
WORKS:—REGENT'S CANAL DOCK, 602, COMMERCIAL ROAD EAST, LONDON, E. (Near Stepney Station.) (3)

PARIS EXHIBITION, 1878.

GOLD AND SILVER MEDALS AWARDED for Steam-Engines & Boilers, also the Special Steam Pump, and Compound Pumping Engine.

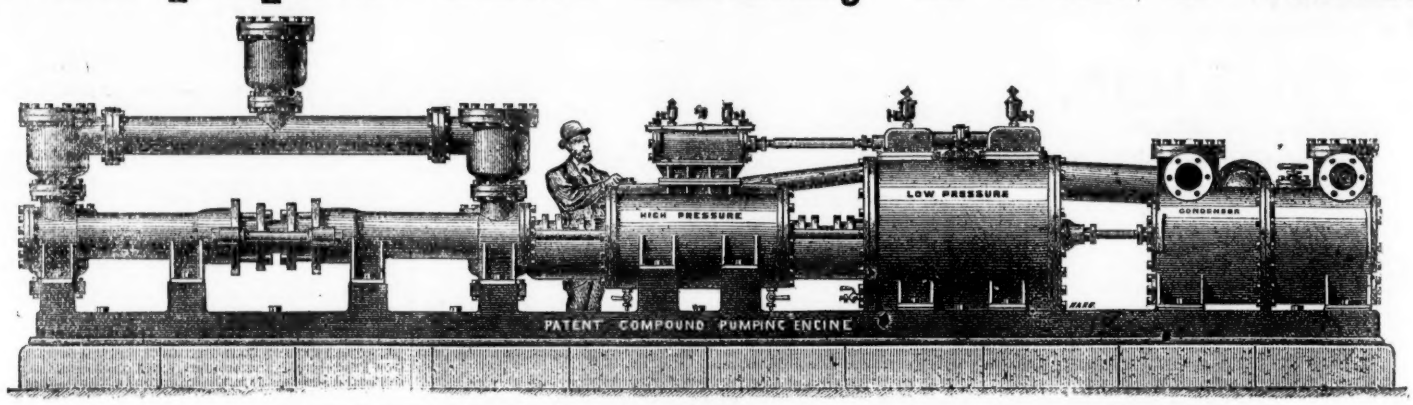
TANGYE BROTHERS AND HOLMAN,

CORNWALL HOUSE, 35, QUEEN VICTORIA STREET, LONDON, E.C.,
AND BIRMINGHAM, (TANGYE BROTHERS), CORNWALL WORKS, SOHO.

TANGYE'S DIRECT-ACTING
COMPOUND PUMPING ENGINE.

For use in Mines, Water Works, Sewage Works,

And all purposes where Economy of Fuel is essential.



TANGYE'S DIRECT-ACTING COMPOUND PUMPING ENGINE, WITH AIR-PUMP CONDENSER.

TANGYE'S COMPOUND PUMPING ENGINE COMBINES SIMPLICITY, CERTAINTY OF ACTION, GREAT ECONOMY IN WORKING, COMPACTNESS, AND MODERATE FIRST COST.

This Engine will be found the most simple and economical appliance for Mine Draining, Town Water Supply, and General Purposes of Pumping ever introduced, and as regards Mine Draining, the first cost is very moderate compared with the method of raising water from great depths by a series of 40 or 50 fm. lifts. No costly engine-houses or massive foundations, no repetition of plunger lifts, ponderous connecting rods, or complication of pitwork, are required, while they allow a clear shaft for hauling purposes. In this Engine the economical advantages resulting from the expansion and condensation of steam are very simply and effectively obtained. The steam after leaving the high-pressure cylinder is received into and expanded in the low-pressure cylinder, and is thus used twice over before being exhausted into the condenser or atmosphere.

The following first-class Testimonials will bear evidence as to the efficiency and economy of the Engine :—

TESTIMONIALS OF TANGYE'S COMPOUND PUMPING ENGINE.

$\frac{21"}{36}$ × 10" × 48" COMPOUND CONDENSING STEAM PUMPING ENGINE.

Newcastle and Gateshead Water Company, Newcastle-on-Tyne, Oct. 20, 1879.

Messrs. Tangye Brothers.

GENTLEMEN,—In reply to your enquiry as to the efficiency of the two pairs of Compound Condensing Engines recently erected by you for this company at our Gateshead Pumping Station, I have great pleasure in informing you that they have far surpassed my expectations, being capable of pumping 50 per cent. more water than the quantity contracted for; and by a series of experiments I find they work as economically as any other engine of the compound type, and will compare favourably with any other class of pumping engine. By the simplicity of their arrangement and superior workmanship they require very little attendance and repairs, and the pumps are quite noiseless. A short time ago I had them tried upon air by suddenly shutting off the column, and found they did not run away, thus showing the perfect controlling or governing power of the Floyd's Improved Steam-moved Reversing Vale. I will thank you to forward the other two pairs you have in hand for our Benwell Pumping Station. Yours respectfully,

(Signed) JOHN R. FORSTER, Engineer.

$\frac{21"}{36}$ × 12" × 48" DOUBLE RAM COMPOUND CONDENSING STEAM PUMPING ENGINES.

The Chesterfield and Boythorpe Colliery Company (Limited), Registered Office, Boythorpe, near Chesterfield, Oct. 1, 1879.

Messrs. Tangye Brothers. Supplied in January, 1878.

GENTLEMEN,—Referring to the above, which we have now had working continuously night and day for the last 12 months, we are glad to say that it is giving us every satisfaction. It is fixed about 400 feet below the surface, the steam being taken down to it at pressure of 45 lbs. per square inch. We can work the pump without any difficulty at 28 strokes per minute=224 ft. piston speed. The pumping power is enormous. The vacuum in the condenser being from 11½ to 13 lbs. The pump is easily started, and works well and regularly. The amount of steam taken being much less than we anticipated. We consider the economy in working very satisfactory indeed. The desire for power and economy at the present day will certainly bring this pump into great requisition. Yours truly,

(Signed) M. STRAW, Manager.

SIZES AND PARTICULARS.

Diameter of High-pressure Cylinder.....In.		8	8	8	10	10	10	10	12	12	12	12	14	14	14	14
Ditto of Low-pressure Cylinder .....In.		14	14	14	18	18	18	18	21	21	21	21	24	24	24	24
Ditto of Water Cylinder .....In.		4	5	6	5	6	7	8	6	7	8	10	7	8	10	12
Length of stroke .....In.		24	24	24	24	24	24	24	24	24	24	24	36	36	36	36
Gallons per hour approximate		3900	6100	8800	6100	8800	12.000	15,650	8,800	12,000	15,650	24,450	12,000	15,650	24,450	35,225
Height in feet water can be raised with 40 lbs. pressure per square inch in cylinder	Non-condensing..	360	330	160	360	250	184	140	360	264	202	130	360	275	175	122
Ditto ditto	ditto—with Holman's Condenser...	480	307	213	480	333	245	187	480	352	269	173	480	367	234	162
Ditto ditto	ditto—with Air-pump Condenser...	600	384	267	600	417	306	335	600	440	337	216	600	459	203	203

CONTINUED.

Diameter of High-pressure Cylinder .....In.		16	16	16	16	18	18	18	18	21	21	21	24	24	24	30	30
Ditto of Low-pressure Cylinder .....In.		28	28	28	28	32	32	32	32	36	36	36	42	42	42	52	52
Ditto of Water Cylinder .....In.		8	10	12	14	8	10	12	14	10	12	14	10	12	14	12	14
Length of stroke .....In.		36	36	36	36	48	48	48	48	48	48	48	48	48	48	48	48
Gallons per hour approximate		15,650	24,450	35,225	47,950	13,650	24,450	35,225	47,950	24,450	35,225	47,950	24,450	35,225	47,050	35,225	47,950
Height in feet water can be raised with 40 lbs. pressure per square inch in cylinder	Non-condensing..	360	230	160	118	456	292	202	149	397	276	202	518	360	264	562	
Ditto ditto	ditto—with Holman's Condenser...	480	307	213	154	603	389	269	198	528	363	269	691	480	352	750	
Ditto ditto	ditto—with Air-pump Condenser...	600	384	267	191	750	486	337	248	660	450	337	864	600	440	937	

PRICES GIVEN ON RECEIPT OF REQUIREMENTS.

Any number of these Engines can be placed side by side, to work in conjunction or separately as desired, thereby multiplying the work of one Pump to any extent.

NORTHERN DEPOT:—TANGYE BROTHERS, ST. NICHOLAS BUILDINGS, NEWCASTLE-ON-TYNE.

TWO GOLD MEDALS.

SOLE MAKERS—

The LEEDS FORGE CO., Ltd.,

Leeds. Yorkshire.

FOX'S PATENT

CORRUGATED FURNACE FLUES,

NOW APPLIED TO OVER

5000 IND. H.P.

PARIS, 1878.

PRICE LISTS AND PARTICULARS ON APPLICATION.

Awarded Gold Medal, Paris Exhibition, 1878.

HADFIELD'S STEEL FOUNDRY COMPANY.

FIRST PRIZE MEDALS AT LEEDS, MANCHESTER, AND WREXHAM EXHIBITIONS, 1875 AND 1876.

ATTERCLIFFE, SHEFFIELD,

DEVOTE THEIR EXCLUSIVE ATTENTION TO THE MANUFACTURE OF

CRUCIBLE STEEL CASTINGS,

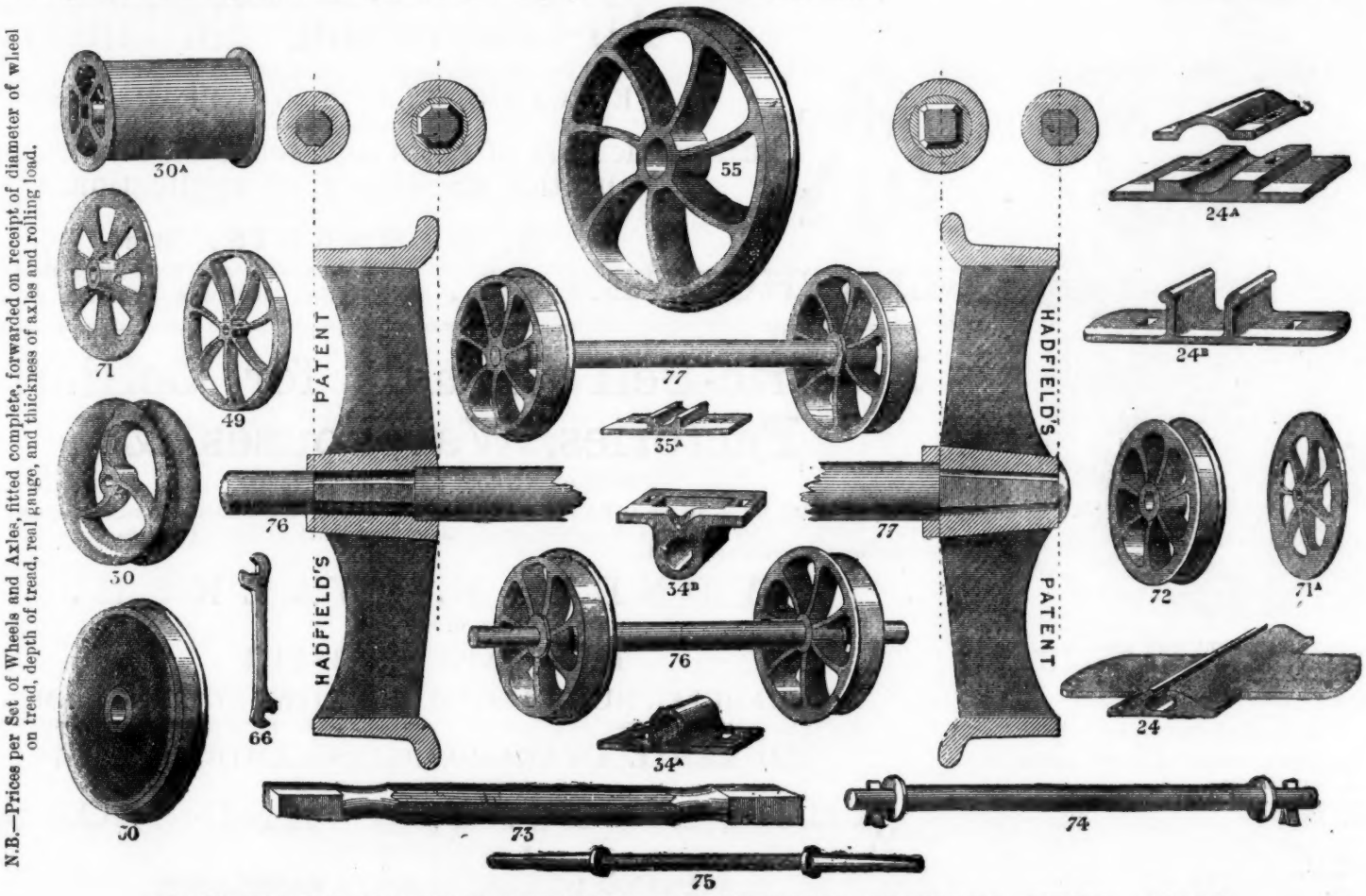
FOR

Engineering & Mining Purposes,

AND ARE THE SOLE MAKERS OF

HADFIELD'S CRUCIBLE STEEL WHEELS.

One of our departments is specially adapted for the manufacture of these Wheels (as shown below), for Collieries, Ironstone Mines, Slate Quarries, Ironworks, Lead Mines, &c., &c. We have made, and are now making, many HUNDRED THOUSANDS; and having Patented a New Method of Fitting Wheels upon axles, being cheap, effective, and expeditious, we can execute orders entrusted to us with promptitude, our capacity in this department alone being equal to about 2000 wheels per week.



HADFIELD'S PATENT METHOD OF FITTING WHEELS UPON AXLES.

The advantages of the above system are that the Wheels being forced upon a Taper Square-ended Axle, by Machinery, and then riveted (the machine securing truth), it is impossible that they can come loose or get within gauge. They are very cheaply fitted on, and run exceedingly true.

We construct the Arms of wheels upon the curved principle(as shown in the drawings above), consequently the shrinkage or cooling of the Castings is not interfered with, thus securing the greatest advantages of our very strong material.

CRUCIBLE CAST-STEEL WHEELS, when cast by us, are made from one-third to one-half lighter than Cast-Iron. They cannotbe broken while working, even with rough usage, and will wear at least twelve times as long as Cast-Iron, thus saving animal and steam power, and reducing wear and tear immensely.

We would also draw special attention to our INCLINE PULLEYS and CAGE GUIDES, the adoption of which will prove highly advantageous.

MACHINE MOULDED STEEL GEAR WHEELS OF EVERY DESCRIPTION.

JOHN WILLIAMS AND CO.,

WISHAW, SCOTLAND,

MANUFACTURERS OF ALL KINDS OF

Cut and Lath Nails; Joiners', Moulders', and Flooring Brads; Copper and Zinc Cut Nails; Colliery Plate Nails; Washers, Boiler Plates, Tube Strips, Sheet Iron for Galvanising and other purposes.

PRICE LIST ON APPLICATION.

PIERCE S. HAMILTON, PRACTICAL GEOLOGIST, SURVEYOR, AND MINING ENGINEER AND AGENT, OFFERS HIS SERVICES in either of these capacities to those interested or desirous of investing in MINING PROPERTY in the PROVINCE OF NOVA SCOTIA or elsewhere in the DOMINION OF CANADA.

Having for years filled the administrative position of Chief Commissioner of Mines for Nova Scotia, and having both before and afterwards been himself largely engaged in Mining operations, MR. HAMILTON has had exceptionally good opportunities of informinghimself as to the variety, extent, and character of the mineral deposits of that Province, and as to the most economical and effective methods of working them.

ADDRESS—PIERCE S. HAMILTON, HALIFAX, NOVA SCOTIA, DOMINION OF CANADA.

MONEY LENT, at EIGHT, NINE, and TEN PER CENT., on FIRST MORTGAGE of FREEHOLDS for IMPROVEMENTS and STOCKING, said freeholds in the Province of MANITOBA.

Address, HERBERT C. JONES, Solicitor, 20, Masonic Hall, Toronto.

SMITHFIELD SHOW, Islington, Dec. 8 to 12, Stand 172 in the Gallery—H. R. Marsden will Exhibit in Operation his PATENT BONE MILL, &c. Complete Catalogues and all Particulars on application at the Stand.

Stones broken equal, and Ores better, than by hand, at one-tenth the cost.

H. R. MARSDEN,

ORIGINAL PATENTEE AND SOLE MAKER OF **BLAKE'S**

Improved Patent Stone Breakers & Ore Crushers.

New Patent Reversible Jaws, in Sections, with Patent Faced Backs.

NEW PATENT ADJUSTABLE TOGGLES.

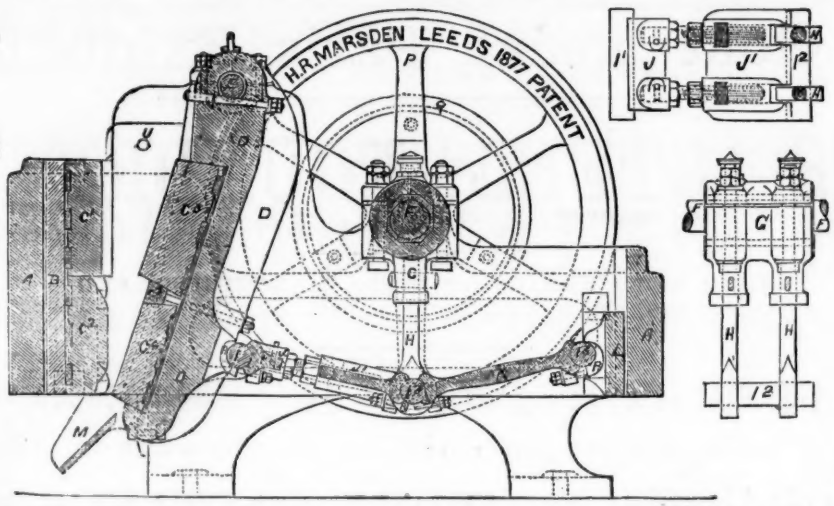
OVER **2500** IN USE.

New Patent Draw-back Motion.

NEW PATENT STEEL TOGGLE BEARINGS.

70

PRIZE MEDALS.



READ THIS—

Wharthole Lime Works, Maryport, Whitehaven, November 7, 1873.

H. R. MARSDEN, Esq., Soho Foundry, Meadow-lane, Leeds.

DEAR SIR,—The machine I have in use is one of the large size, 24 in. by 12 in. The quantity we are breaking daily with this one machine is 250 tons, the jaw being set to break to a size of 2¼ in. We have, however, frequently broken over 300 tons per day of ten hours, and on several occasions over 360 tons during the same period. The stone we break is the blue mountain limestone, and is used as a flux in the various ironworks in this district. We have now had this machine in daily use for over two years without repairs of any kind, and have never had occasion to complain of any inconvenience in using the machine. I hope the one you are now making for me may do its work equally well. The cost—INCLUDING ENGINE-POWER, COALS, ENGINEMAN, FEEDING, and all EXPENSES OF EVERY KIND—is just 3d. per ton. Should any of your friends feel desirous of seeing one of your machines at work, I shall have much pleasure in showing the one alluded to.

I am, dear Sir, yours very truly,
WILLIAM MILLER.

AND THIS—

Wharthole Lime Works, Aspatria, Cumberland, July 11th, 1878.

H. R. MARSDEN, Esq., Soho Foundry, Leeds.

DEAR SIR,—We are in receipt of your letter of 4th inst. I may just state that the stone breaker above named has been under my personal superintendence since its erection, and I have no hesitation in saying that it is as good now as it was five years ago.

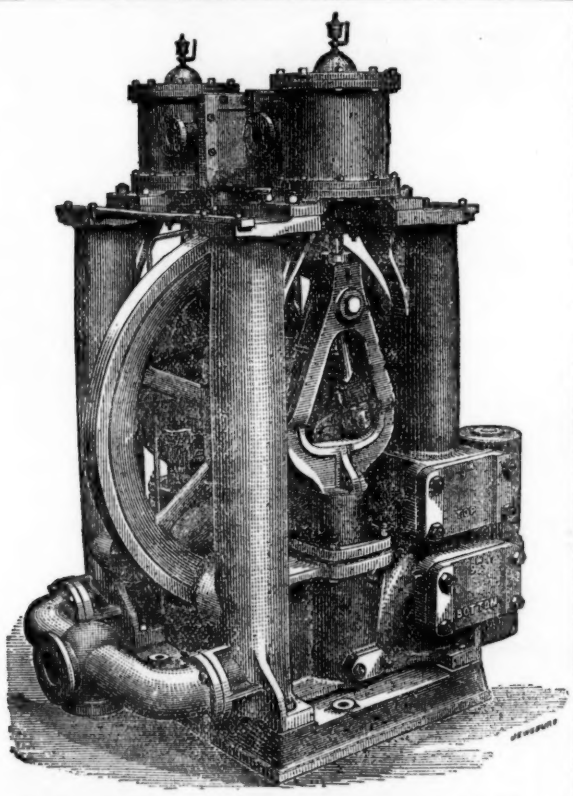
I am, dear Sir, yours faithfully,
FRANCIS GOULD.

GREATLY REDUCED PRICES ON APPLICATION.

ALL BEARINGS are renewable, and made of **H.R.M.'s Patent Compound ANTIFRICTION METAL.**

CATALOGUES, TESTIMONIALS, &c.

H. R. MARSDEN, SOHO FOUNDRY, LEEDS, ENGLAND.



STEAM PUMPS for **COLLIERY PURPOSES**, specially adapted for Forcing Water any height; also for Sinking; and for Feeding Boilers.

JOHN CAMERON has made over SIX THOUSAND.

WORKS: OLDFIELD ROAD, SALFORD, MANCHESTER.

SILVER MEDALS AWARDED AT CORNWALL POLYTECHNIC 1872 AND 1876.

THE WELL-KNOWN PATENT SELF-ACTING ORE DRESSING MACHINERY, as in operation at most of the large Mines in the Kingdom and Abroad, is now supplied solely by THE PATENTEE AND MANUFACTURER, Mr. GEORGE GREEN, Mining Engineer, AT GREATLY REDUCED PRICES; also all descriptions of Mining Machinery, including

GOLD AND SILVER AMALGAMATING MACHINERY, complete. Stamp Mills, Water Wheels, Steam Engines, &c.

ROLLER SHELLS FOR CRUSHING MILLS—a speciality.

SPECIAL DESIGNS FOR EXPORT AND DIFFICULT TRANSIT.

Prices and particulars on application to the Manufactory, ABERYSTWITH, SOUTH WALES.

THE GREAT ADVERTISING MEDIUM FOR WALES.

THE SOUTH WALES EVENING TELEGRAM (DAILY), and SOUTH WALES GAZETTE (WEEKLY), established 1857.

The largest and most widely circulated papers in Monmouthshire and South Wales. Chief Offices, NEWPORT, Mon.; and at CARDIFF.

The "Evening Telegram" is published Daily, the First Edition at 3 P.M.; the Second Edition at 5 P.M. On Friday, the "Telegram" is combined with the "South Wales Weekly Gazette," and Advertisements ordered for not less than Six Consecutive Insertions will be inserted at an Uniform Charge in both papers. P.O.O. and Cheques payable to HENRY RUSSELL EVANS, 14, Commercial-street, Newport, Monmouthshire.

THE NEWCASTLE DAILY CHRONICLE (ESTABLISHED 1764).

THE DAILY CHRONICLE AND NORTHERN COUNTIES ADVERTISER, Offices, Westgate-road, Newcastle-upon-Tyne; 50, Howard-street, North Shields; 195, High-street, Sunderland.

THE "CHAMPION" ROCK BORER

MINE AND QUARRY STANDS, STEEL DRILLS, SPECIALLY PREPARED INDIARUBBER HOSE, TESTED IRON PIPES, &c.

Air-Compressing Machinery,

Simple, strong, and giving most excellent results, and

ELECTRIC BLASTING APPARATUS.

Full particulars of rapid and economical work effected by this machinery, on application.

R. H. HARRIS, late

ULLATHORNE AND CO., Mechanical and Consulting Engineers, 83, QUEEN VICTORIA STREET, LONDON, E.C

Electric-Bell Signals for Collieries, Factories, Warehouses, &c.,

WITH OR WITHOUT GALVANIC BATTERIES.

NEW SYSTEM—CAN BE RUNG AT ANY PART OF THE ROAD. Cheap, safe, and reliable. Efficiency guaranteed. LINES OF TELEGRAPH erected and maintained. LIGHTNING CONDUCTORS, &c.

For estimates and particulars apply to—

SYDNEY F. WALKER,

LATE G. E. SMITH,

TELEGRAPH ENGINEER

COMMERCIAL BUILDINGS LONG ROW NOTTINGHAM.

GOLD MEDAL AWARDED, PARIS EXHIBITION 1878.

THOMAS TURTON AND SONS,

MANUFACTURERS OF

MINING STEEL of every description.

CAST STEEL FOR TOOLS. CHISEL, SHEAR, BLISTER, & SPRING STEEL

MINING TOOLS & FILES of superior quality.

EDGE TOOLS, HAMMERS, PICKS, and all kinds of TOOLS for RAILWAYS, ENGINEERS, CONTRACTORS, and PLATELAYERS. LOCOMOTIVE ENGINE, RAILWAY CARRIAGE and WAGON SPRINGS and BUFFERS.

SHEAF WORKS AND SPRING WORKS, SHEFFIELD.

LONDON OFFICES.—90 CANNON STREET, E.C. PARIS DEPOT—12, RUE DES ARCHIVES.

J. WOOD ASTON AND CO., STOURBRIDGE

(WORKS AND OFFICES ADJOINING CRADLEY STATION),

Manufacturers of

CRANE, INCLINE, AND PIT CHAINS,

Also CHAIN CABLES, ANCHORS, and RIGGING CHAINS, IRON and STEEL SHOVELS, SPADES FORKS, ANVILS, VICES, SCYTHES, HAY and CHAFF KNIVES, PICKS, HAMMERS, NAILS, RAILWAY and MINING TOOLS, FRYING PANS, BOWLS, LADLES, &c., &c.

Crab Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions.

STOURBRIDGE FIRE BRICKS AND CLAY.

Printed by RICHARD MIDDLETON, and published by HENRY ENGLISH (the proprietors) at their offices, 26, FLEET STREET, where all communications are requested to be addressed.—*November 29, 1879.*